

Energy Engineering Analysis Program (EEAP)
Limited Energy Study - **LIGHTING**
Fort Campbell, Kentucky

Final Report

Volume 2

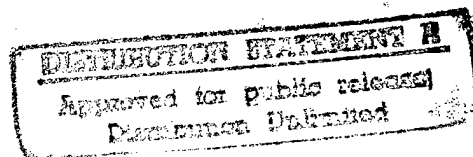
Section 6 & Appendices A-D

CONTRACT #DACA27-01-94-D-0034
SYSTEMS CORP PROJECT #94013.01
SEPTEMBER 23, 1994

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Louisville District-
US Army Corp
of Engineers



SYSTEMS*corp*

SYSTEMS ENGINEERING AND MANAGEMENT CORPORATION

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DEPARTMENT OF THE ARMY
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS
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FY94 EEAP LIGHTING ENERGY STUDY, FT. CAMPBELL, KY

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6 PROJECT IV: INTERIOR LIGHTING AT KOREAN WAR BARRACKS

FY94 EEAP LIGHTING ENERGY STUDY, FT. CAMPBELL, KY

This section contains the Project Development Brochures and the DD 1391 Forms for Project IV: Interior Lighting at Korean War Barracks. Following the DD 1391 Forms is a project summary table, the life cycle cost analysis for the total project, and the calculations and cost estimates for each building included in the report. For the purpose of FEMP funding, the barracks were split into two groups to lower the construction cost of each group, so as to separately fund the projects. The barracks were split geographically with one group being the 3200 and 6700 buildings and the second group being the 6900 buildings. A life cycle cost analysis is included for each group of barracks. The project summary table has two subtotals reflecting the 3200/6700 group and the 6900 group. A colored page divides the two sections. Below is a detailed index of the information included in this section. Listed beside each building number area the high efficiency lighting products utilized in that building.

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Project LCCA	6-28

LCCA for 3200 & 6700 Barracks	6-29
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<u>Bldg</u>	<u>Replacements Utilized*</u>	<u>Page</u>
3211	T8 Fluor, LED Exit	6-30
3212	T8 Fluor, LED Exit	6-39
3213	T8 Fluor, LED Exit	6-48
3214	T8 Fluor, CF, LED Exit	6-57
3215	T8 Fluor, CF, LED Exit	6-67
3216	T8 Fluor, CF	6-78
3217	T8 Fluor, CF, LED Exit	6-86
3218	T8 Fluor, CF, LED Exit	6-96
6709	T8 Fluor, CF, LED Exit	6-106
6710	T8 Fluor, CF, LED Exit	6-116
6711	T8 Fluor, CF, LED Exit	6-127
6712	T8 Fluor, CF, LED Exit	6-137
6718	T8 Fluor, CF, LED Exit	6-148
6719	T8 Fluor, CF, LED Exit	6-159
6725	T8 Fluor, CF, LED Exit	6-169
6726	T8 Fluor, CF, LED Exit	6-180
6727	T8 Fluor, CF, LED Exit	6-190
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LCCA for 6900 Barracks	6-253
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6909	T8 Fluor, CF	6-254
6910	T8 Fluor, CF	6-264
6911	T8 Fluor, CF	6-273
6912	T8 Fluor, CF	6-282
6917	T8 Fluor, CF	6-290
6918	T8 Fluor, CF	6-299
6919	T8 Fluor, CF	6-303
6920	T8 Fluor, CF	6-319
6923	T8 Fluor, CF	6-328
6927	T8 Fluor, CF, LED Exit	6-337
6928	T8 Fluor, CF	6-347
6929	T8 Fluor, CF	6-357
6930	T8 Fluor, CF	6-366
6931	T8 Fluor, CF	6-376
6936	T8 Fluor, CF	6-385
6937	T8 Fluor, CF	6-394
6938	T8 Fluor, CF	6-404
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facility

INTERIOR LIGHTING REPLACEMENTS AT KOREAN WAR BARRACKS
Fort Campbell, Kentucky

project coordinator for using service

Arlin Wright

functional requirements summary, PDB-1

6-2

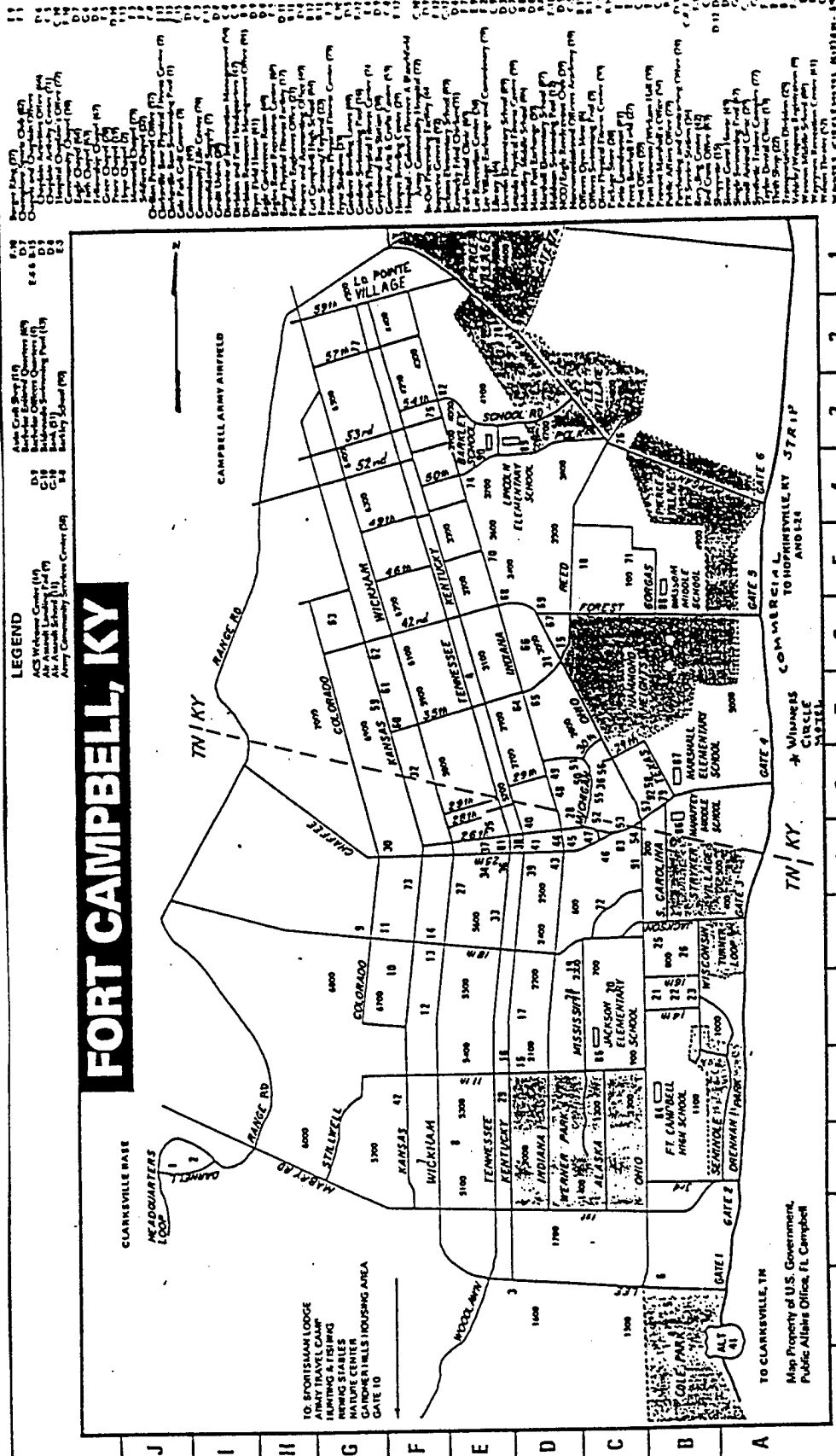
OBJECTIVE:

The objective of this project is to replace existing interior lighting with high efficiency fixtures and lamps at the Korean War Barracks. The replacement of the existing lighting will reduce energy consumption and life cycle operating costs for the Barracks in accordance with the Army Energy Resources Management Plan (ERMP) and Executive Order 12759.

functional requirements summary, PDB-1

6-3

LEGEND



facilities requirements sketch, PDB- 1/2

6-4

APPENDIX C
DOCUMENTATION CHECKLIST

A. SPECIAL CONSIDERATIONS

ITEM		Required or Not Required	To Be Determined	Comment Attached	Document Attached
A-1	Cost estimates for each primary and supporting facility	R	D		
A-2	Telecommunications system coordination with USACC and authorization for exceptions	NR			
A-3	Coordination with state and local governmental requirements (blind vendors, medical facilities, construction and operating permits, clearinghouse coordination, etc.)	R	A		
A-4	Assignment of airspace	NR			
A-5	Economic analysis of alternatives	R	D		
A-6	Approval for new starts	NR			
A-7	International balance of payments (IBOP) coordination with U.S. European command and NATO—overseas cost estimates and comparables (include rate of exchange used in estimates)	NR			
A-8	Impact on historic places—on site survey by authorized archeologist and coordination with state historic preservation officer and advisory council on historic preservation	NR			
A-9	Exceptions to established criteria	NR			
A-10	Coordination with various staff agencies (Provost Marshall-physical security, etc.)	R			
A-11	Identification of related or support projects (so projects can be coordinated)	R			
A-12	Required completion date	R			
Other Special Considerations (List and number items)					
1. See Appendix A					

REQUIRED OR NOT REQUIRED — Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED — Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED — Significant information summarized or explained and attached.

DOCUMENT ATTACHED — Significant information is in an existing document which is attached.

*** BY WHOM** (Check and insert appropriate letter)

A — DFAE

B — Using Service

C — Construction Service

D — Designer

E — Other (Check Comments Attached and explain)

documentation checklist

6-6

B. SITE DEVELOPMENT

ITEM		Required or Not Required	To Be Determined	Comment Attached	Document Attached
B-1	Consultation with the District Office to determine and evaluate flood plain hazards	NR			
B-2	Preparation, submission, and/or approval of new	NR			
(A)	General Site Plan	NR			
(B)	Annotated General Site Plan	NR			
(C)	Sketch Site Plan	NR			
(D)	Facilities Requirements Sketch	R			
B-3	Preparation of	NR			
(A)	Site Survey	NR			
(B)	Subsoil Information	NR			
B-4	Approval by Department of Defense Explosive Safety Board (DDESB) for Safety Site Plan	NR			
	Other Site Development Considerations (List and number items)				
	1. See Project Development Brochure, PDB-1/2				

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documentation checklist

6-7

C. ARCHITECTURAL & STRUCTURAL

ITEM		Required or Not Required	To Be Determined	Comment Attached	Document Attached
C-1	Reconciliation with troop housing programs and requirements	NR			
C-2	Evaluation of existing facilities (including degree of utilization)	R	D		1
C-3	Approval for removal and relocation of existing useable facilities	NR			
C-4	Evaluation of off-post community facilities	NR			
C-5	Storage and maintenance facilities (including nuclear weapons)	NR			
C-6	Coordination hospitals, medical and dental facilities with Surgeon General	NR			
C-7	Coordination of aviation facilities with FAA	NR			
C-8	Coordination air traffic control and navigational aids with USACC	NR			
C-9	Tabulation of types and numbers of aircraft	NR			
C-10	Evaluation of laboratory, research and development, and technical maintenance facilities	NR			
C-11	Coordination chapels with Chief of Chaplains	NR			
C-12	Review food service facilities by USATSA	NR			
C-13	Automated data processing system or equipment approvals—cost analysis when ADP and/or communication centers not co-located with related facilities	NR			
C-14	Coordination postal facilities with U.S. Postal Service Regional Director	NR			
C-15	Laundry and dry cleaning facilities coordination with ASD(I&L)	NR			
C-16	Tenant facilities coordination with installation where sited	NR			
C-17	Facilities for or exposed to explosions, toxic chemicals, or ammunition—review by DDESB (See also Item B-4)	NR			
C-18	Analysis of deficiencies	R	D		1
C-19	Consideration of alternatives	R	D		2
C-20	Determination whether occupants will include physically handicapped or disabled persons	NR			
C-21	As-build drawings for alterations or additions	R	C		
C-22	Availability of Standard Design or site adaptable designs	NR			
Other Architectural & Structural (List and number items)					
1. See Supplemental Data Detailed Project Justification Paragraphs D3.					
2. See Supplemental Data Detailed Project Justification Paragraph D4.					

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documentation checklist

6-8

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS

ITEM

- D-1 Fuel considerations and cost comparison analysis
- D-2 Energy requirements appraisal (ERA)
- D-3 Conformance with DOD Energy Reduction requirements
- D-4 Evaluation of existing and/or proposed utility systems

Other Mechanical and Utility Systems (List and number items)

1. See Special Requirements, Paragraph 3 (SRP-3)

Required or Not Required	To Be Determined	Comment Attached	Document Attached
R	D		
R	D		1
R	D		
R	D		

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documentation checklist

6-9

E. ENVIRONMENTAL CONSIDERATIONS

ITEM		Required or Not Required	To Be Determined	Comment Attached	Document Attached
E-1	Environmental impact assessment	R	D		1
E-2	EIA conclusions require Environmental Impact Statement	NR			
E-3	Determination of health, environmental or related hazards. Assistance to determine existence of any health, environmental or related hazard may be requested from Aberdeen Proving Ground, MD 21010, the Office of the Surgeon General, Attn: DASG-HCH (Army Environmental Hygiene Agency)	NR			
E-4	Air/water pollution permit, coordination with agencies and compliance with standards at Federal, state and local level	NR			
E-5	Corrective measures associated with Environmental Impact Statements or assessment—list separately and evaluate.	NR			
<p>Other environmental considerations (list and number items)</p> <p>1. See Supplemental Data Detailed Project Justification Paragraph D9.</p>					

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- E — Other (Check Comments Attached and explain)

documentation checklist

6-10

APPENDIX D
TECHNICAL DATA CHECKLIST

A. SPECIAL CONSIDERATIONS

ITEM	
A-1	Factors of risk, restriction or unusual circumstance expected to increase costs beyond applicable area averages
A-2	Construction phasing requirements
A-3	Functional support equipment (mechanical, electrical, structural, and security) to be built in
A-4	Equipment in place and justification
A-5	Other equipment and furniture (O&MA, OPA) and costs
A-6	Special studies and tests (hazards analyses, compatibility testing, new technology testing, etc.)
A-7	Type of construction (permanent, temporary, semi-permanent)
A-8	Government furnished equipment (quantities, procurement time, availability and special handling and storage requirements). Funds used for procurement.
Other special considerations (list and number items)	

Required or Not Required	To Be Determined	Comment Attached	Document Attached
NR			
R	D		
NR			
NR			
NR			
NR			
NR			
NR			

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- D — Designer
- E — Other (Check Comments Attached and explain)

technical data checklist

6-12

B. SITE DEVELOPMENT

ITEM		Required or Not Required	To Be Determined	Comment Attached	Document Attached
B-1	Construction restrictions or guidelines pertaining to site access and preferred construction routes	R	A		
(A)					
(B)	Airfield clearance, explosive storage, working hours, safety, etc.	NR			
(C)	Facilities and/or functions or adjoining areas (structures, materials, impact)	R	A		
B-2	Real estate actions (acquisition, disposal, lease, right-of-way)	NR			
B-3	Demolition/relocation required (data)				
(A)	Special considerations due to explosives/radioactivity/chemical contamination/asbestos emissions/toxic gases	R	A	1	
(B)	Restrictions on disposal of demolished/relocated material including hazardous waste	NR			
B-4	Pavement types and requirements (including traffic surveys and MTMC coordination)	NR			
B-5	Landscape considerations				
(A)	Protection of existing vegetation	R	A		
(B)	Stockpile topsoil	NR			
Other Site Development (List and number items)					
1. There is a possibility that the existing lighting may contain PCB's in the ballasts.					

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C — Construction Service

D — Designer

E — Other (Check Comments Attached and explain)

technical data checklist

6-13

C. ARCHITECTURAL & STRUCTURAL

ITEM		Required or Not Required	To Be Determined	Comment Attached	Document Attached
C-1	Vibration-producing equipment requiring isolation	R	D		
C-2	Seismic zone and other design load criteria (typhoon, hurricane, earthquake loads, high or low loss potential)	NR			
C-3	Protective shelter evaluation and resistant design criteria (conventional/nuclear blast and radiation, chemical/biological)	NR			
C-4	Unusual foundation requirements (pier, pile, caisson, deep foundations, mat, special treatment, permafrost areas, soil bearing)	NR			
C-5	Designation and strength of units to be accommodated	NR			
C-6	Requirements and data for special design projects	NR			
C-7	Unusual floor and roof loads (safes, equipment)	NR			
C-8	Security features (arms rooms, vaults, interior secure areas)	NR			
Other Architectural & Structural (List and number items)					

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D — Designer

E — Other (Check Comments Attached and explain)

technical data checklist

6-14

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS

ITEM

D-1	Special mechanical requirements or considerations (elevator, crane, hoist, etc.)
D-2	Special peak usage periods and peak leveling techniques
D-3	Maintenance considerations (accessibility of equipment, compatibility with existing equipment)
D-4	Plumbing—availability, general system type and characteristics (proposed and/or existing, incl. compressed air and gas)
D-5	Heating—availability, general system type and characteristics (proposed and/or existing)
D-6	Ventilating, air condition/refrigeration—availability, general system type and characteristics (proposed and/or existing)
D-7	Electrical—availability, general system type and characteristics incl. airfield lighting, communication, etc. (proposed and/or existing)
D-8	Water supply/waste treatment—availability, general system type and characteristics (proposed and/or existing)
D-9	Energy requirements/fuel conversion (sources, availability, loads, types of fuel, etc.)
D-10	Solar energy evaluation
	Other Mechanical & Utility Systems (List and number items)

Required or Not Required	To Be Determined	Comment Attached	Document Attached
NR			
NR			
R	D		
NR	D		
NR			
R	D		
NR			
NR			
R	D		
NR			

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E — Other (Check Comments Attached and explain)

technical data checklist

6-15

E. ENVIRONMENTAL CONSIDERATIONS

ITEM	
E-1	Waste water treatment, air quality, and solid waste disposal criteria
	Other Environmental Considerations (List and number items)

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

E - Other (Check Comments Attached and explain)

D-13

F. FIRE PROTECTION

ITEM

Required or
Not Required

To Be
•
Determined

Comment
Attached

Document
Attached

F-1

Special fire protection systems or features (detection and suppression equipment, hazards, etc.)

Other Fire Protection Considerations (List and number items)

NR

REQUIRED OR NOT REQUIRED — Not relevant or no information to communicate. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

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technical data checklist

6-17

1. COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA			2. DATE 23 September 94	
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky		4. PROJECT TITLE Interior Lighting Replacements at Korean War Barracks			
5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER ECIP #4	8. PROJECT COST (\$000) \$1,260.72		
9. COST ESTIMATES					
ITEM		U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility					
Interior Light Fixtures		Lot	1	1,086.36	1,086.36
Subtotal					1,086.36
Contingency (10%)					108.64
Total Contract Cost					1,195.00
Supervision, Inspection and Overhead (5.5%)					65.72
Total Request					1,260.72
<p>10. DESCRIPTION OF PROPOSED CONSTRUCTION</p> <p>The existing interior lighting is a combination of standard efficiency fluorescent fixtures and incandescents. The proposed project will replace the interior lighting fixtures with T8 fluorescents with high efficiency electronic ballasts and compact fluorescents. The implementation of this project will save 9,572,124 MJ/yr of electrical energy. The first year dollar savings is \$148,900 and the Savings to Investment Ratio (SIR) is 1.43.</p> <p>11. REQUIREMENT</p> <p>Project: The proposed interior lighting project replaces lighting at the following Korean War Barracks with energy efficient lighting: 3211, 3212, 3213, 3214, 3215, 3216, 3217, 3218, 6709, 6710, 6711, 6712, 6718, 6719, 6725, 6726, 6727, 6728, 6730, 6731, 6732, 6733, 6909, 6910, 6911, 6912, 6917, 6918, 6919, 6920, 6923, 6927, 6928, 6929, 6930, 6931, 6936, 6937, 6938, 6939, 6940, 6943, 6944, 6945.</p> <p>Requirement: The project is required to reduce the energy consumption of lighting systems and to comply with the Army Energy Resources Management Plan (ERMP) and Executive Order 12759. The proposed project will reduce annual energy consumption by 9,572,124 MJ/yr and annual energy cost by \$148,900.</p> <p>Current Situation: The existing lighting at the above barracks is inefficient fluorescent and incandescent fixtures.</p>					

1. COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA		2. DATE 23 September 94
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky			
4. PROJECT TITLE INTERIOR LIGHTING REPLACEMENT AT KOREAN WAR BARRACKS		5. PROJECT NUMBER ECIP #4	
<p>Impact if not provided: If the proposed project is not funded, a reduction of 9,572,124 MJ/yr cannot be achieved, and excessive amounts of energy will continue to be used. There will be no contribution to energy reduction goals established for United States Army facilities by Army Headquarters.</p>			
<p style="text-align: right;">_____ Colonel, USA Commanding</p>			
ESTIMATED CONSTRUCTION START:		September 1995	INDEX:
ESTIMATED MIDPOINT OF CONSTRUCTION:		April 1996	INDEX:
ESTIMATED CONSTRUCTION COMPLETION:		November 1996	INDEX:
DETAILED JUSTIFICATIONS			
D1. GENERAL			
The proposed project encompasses the replacement of lighting at 44 Korean War Barracks. The project will decrease the energy consumption of the lighting system without reducing light levels except where necessary.			
D2. ACCOMMODATIONS NOW IN USE:			
The existing lighting systems are comprised of standard efficiency fluorescent and incandescent fixtures.			
D3. ANALYSIS OF DEFICIENCY:			
Currently, the Korean War Barracks are using standard or low efficiency fixtures for lighting. The purpose of this project is to replace the existing lighting with new light fixtures which are much more efficient. The current deficiency results in large amounts of energy usage to maintain adequate lighting.			

1. COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA	2. DATE 23 September 94
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky		
4. PROJECT TITLE INTERIOR LIGHTING REPLACEMENT KOREAN WAR BARRACKS		5. PROJECT NUMBER ECIP #4
<p>D4. CONSIDERATION OF ALTERNATIVES:</p> <p>The only alternatives to the proposed project are to install lower efficiency light fixtures. The disadvantages of using lower efficiency light fixtures is that less energy savings can be realized without significantly reducing the construction cost. If a less efficient light fixture is selected, the project would have a lower SIR.</p> <p>D5. CRITERIA FOR PROPOSED PROJECT:</p> <p>The proposed project will conform with all applicable federal and United States Army Regulations.</p> <p>D6. PROGRAM FOR RELATED EQUIPMENT:</p> <p>No equipment funded from appropriations other than MCA are required.</p> <p>D7. DISPOSAL OF PRESENT ASSETS:</p> <p>Light fixtures at the 44 Korean War Barracks will be disposed.</p> <p>D8. SURVIVAL FACILITIES:</p> <p>The proposed project is not suitable for inclusion of protective shelters.</p> <p>D9. SUMMARY OF ENVIRONMENTAL CONSEQUENCES:</p> <p>The proposed project has been analyzed and will not adversely impact the environment. Energy savings resulting from the project will conserve natural resources.</p> <p>D10. EVALUATION OF FLOOD HAZARDS AND ENCROACHMENT ON WETLANDS:</p> <p>It has been determined that these facilities are not located in a flood plain and they do not encroach on wetlands.</p> <p>D11. ECONOMIC JUSTIFICATION:</p> <p>The proposed project qualifies under ECIP Guidelines in AR-415-15. SIR for the project is 1.43 with a simple payback of 8.47 years. See Economic Analysis, SRP-1</p>		

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3. INSTALLATION AND LOCATION Fort Campbell, Kentucky		
4. PROJECT TITLE INTERIOR LIGHTING REPLACEMENTS AT KOREAN WAR BARRACKS		5. PROJECT NUMBER ECIP #4
<p>D12. UTILITY AND COMMUNICATION SUPPORT:</p> <p>A. No related utility support projects are programmed. Adequate utilities are available to support the project.</p> <p>B. No telecommunication support is required.</p> <p>D13. PROTECTION OF HISTORIC PLACES AND ARCHEOLOGICAL SITES:</p> <p>The project involves the replacement of light fixtures and installation of controls in and around existing buildings. Review procedures have been implemented for this project in accordance with 36 CFT 800. The review has established that there will be no effect.</p> <p>D14. PROJECT DEVELOPMENT BROCHURE (PART 1):</p> <p>A Project Development Brochure was prepared on 23 September 94 and is attached as a part of the programming documentation.</p> <p>D15. ENERGY REQUIREMENTS:</p> <p>The proposed project will reduce present energy consumption by 9,572,124 MJ/yr at the cost savings of \$148,900 per year. See Energy Requirements Appraisal (ERA) in Special Requirements, Paragraph 3 (SRP-3).</p> <p>D16. PROVISION FOR THE HANDICAPPED:</p> <p>No provisions for the handicapped will be made since the scope of the project is in no way applicable to designing for the handicapped.</p> <p>D17. REAL PROPERTY MAINTENANCE ACTIVITY (RPMA) ANALYSIS:</p> <p>A. Physical impact: There will be light fixtures removed and replaced by the same number of light fixtures. No new structures will be added.</p>		

1. COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA	2. DATE 23 September 94								
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky										
4. PROJECT TITLE INTERIOR LIGHTING REPLACEMENT AT KOREAN WAR BARRACKS		5. PROJECT NUMBER ECIP #4								
<p>B. Operations and Maintenance (O&M) impact:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;"><u>YEAR</u></th> <th style="text-align: center;"><u>O&M</u> <u>NET CHANGE (\$000)</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1994</td> <td style="text-align: center;">-24.0</td> </tr> <tr> <td style="text-align: center;">1995</td> <td style="text-align: center;">-24.0</td> </tr> <tr> <td style="text-align: center;">1996</td> <td style="text-align: center;">-24.0</td> </tr> </tbody> </table> <p>C. Backlog of Maintenance and Repair (BMAR) impact:</p> <p>There will be no net change in the number of fixtures or in fixture life expectancy. There will be no effect on BMAR.</p> <p>D18. COMMERCIAL ACTIVITIES:</p> <p>The proposed project is not a "New Start Expansion" as defined by DA Circular 235-1. The project has been reviewed in light of the requirements of commercial and industrial facilities. It has been determined that whereas the project does not affect commercial facilities, the requirements of DA Circular 235-1 does not apply.</p>			<u>YEAR</u>	<u>O&M</u> <u>NET CHANGE (\$000)</u>	1994	-24.0	1995	-24.0	1996	-24.0
<u>YEAR</u>	<u>O&M</u> <u>NET CHANGE (\$000)</u>									
1994	-24.0									
1995	-24.0									
1996	-24.0									

1. COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA	2. DATE 23 September 94
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky		
4. PROJECT TITLE INTERIOR LIGHTING REPLACEMENTS KOREAN WAR BARRACKS		5. PROJECT NUMBER ECIP #4

Life Cycle Cost Analysis
Project Title: Interior Lighting Replacements
Fiscal Year: 1994
Analysis Date 09/23/94
Economic Life: Fifteen (15) Years

1. INVESTMENT

A. CONSTRUCTION COST	1,146,105
B. SIOH	57,305
C. DESIGN COST	57,305
D. ENERGY CREDIT CALC	-0-
E. SALVAGE VALUE	-0-
F. TOTAL INVESTMENT	1,260,715

2. ENERGY SAVINGS
ANALYSIS DATE ANNUAL SAVINGS, UNIT COST & DISCOUNTED SAVINGS

FUEL	COST \$/MBtu (1)	SAVINGS MBtu/YR(2)	ANNUAL \$ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	6.18	9,279	57,344	12.43	\$712,789
B. DIST					
C. RESID					
D. NG					
E. DEMAND			67,540	11.85	800,349
F. TOTAL		9,279	124,884		1,513,138

3. NON-ENERGY SAVINGS

A. ANNUAL RECURRING (1)DISCOUNT FACTOR	11.85	\$24,016
B. NON-RECURRING SAVINGS		\$284,590

ITEM	SAVINGS (+) COST(-)(1)	YEAR OF OCCURRENCE (2)	DISCOUNT FACTOR (2)	DISCOUNTED SAVINGS(+) COST (-)(4)
a. Replace Interior				
b. Replace Exterior				
c.				
d. Total				

C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+)/COST(-) 284,590

1. COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA		2. DATE 23 September 94
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky			
4. PROJECT TITLE INTERIOR LIGHTING REPLACEMENTS AT KOREAN WAR BARRACKS		5. PROJECT NUMBER ECIP #4	
SPECIAL REQUIREMENTS PARAGRAPH 1 (SRP-1) (continued)			
4. FIRST YEAR DOLLAR SAVINGS		\$148,900	
5. SIMPLE PAYBACK PERIOD		8.47 Years	
6. TOTAL NET DISCOUNTED SAVINGS		\$1,797,727	
7. DISCOUNTED SAVINGS RATIO		1.43	

1. COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA	2. DATE 23 September 94
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky		
4. PROJECT TITLE INTERIOR LIGHTING REPLACEMENT AT KOREAN WAR BARRACKS		5. PROJECT NUMBER ECIP #4
<p>SPECIAL REQUIREMENTS PARAGRAPH 3 (SRP-3):</p> <p>Energy Requirements Appraisal (ERA)</p> <ol style="list-style-type: none"> 1. Project Description: Replace existing lighting systems with more efficient lighting systems without reducing the light levels. 2. Estimated Energy Consumption: The buildings are currently lit by standard efficiency lighting. The existing lighting system consumes 22,801,394 MJ/yr of energy. Replacing the existing lighting with high efficiency lighting will result in 9,572,124 MJ/yr of electrical energy savings, a forty-two percent (42%) reduction in current energy consumption. 3. Energy Sources: No new energy sources are required for the proposed project. The use of solar energy for this project is impractical. 4. Energy Use Impacts: The proposed project will substantially reduce the consumption of electricity for lighting. The burden on the existing base distribution system will be lessened. 5. Energy Conservation: The proposed project will reduce annual energy consumption by 9,572,124 MJ/Yr with annual energy cost savings of \$148,900. The project complies with Army Resources Management Plan (ERMP) and Executive Order 12759. 6. Energy Alternatives: The proposed project represents the greatest possible reduction in energy consumption forty-two percent (42%), without reducing the current lighting levels. The current levels do not exceed the levels recommended by ASHRAE. 7. Energy Effects: The proposed project provides positive environmental effects. It reduces the current energy consumption by forty-two percent (42%), effectively reducing the consumption of non-renewable fuel sources. The degrading of environmental standards would not make more efficient energy sources available. 8. Basis of Approval: Total energy requirements and alternative fuel sources have been considered and included in this appraisal or discarded as applicable. 		

TABLE 6.1
PROJECT SUMMARY: INTERIOR LIGHTING AT KOREAN WAR BARRACKS

PAGE 1 OF 2

ECO NUMBER	BUILDING NUMBER	BASELINE ENERGY (MJ)	ECO ENERGY (MJ)	ENERGY SAVINGS (MJ)	1ST YEAR SAVINGS	INVESTMENT COSTS	ANNUAL RECURRING	SPB (YR)	SIR	MATERIAL COSTS	LABOR COSTS	ADDITIONAL COSTS*	TOTAL COST ESTIMATE
1	3211	461,732	273,528	188,204	\$2,628	\$28,097	\$82	10.69	1.13	\$11,896	\$8,956	\$7,245	\$28,097
1	3212	702,374	426,708	275,666	\$4,081	\$37,104	\$164	9.09	1.33	\$15,298	\$12,237	\$9,569	\$37,104
1	3213	489,861	289,224	200,637	\$2,950	\$27,215	\$327	9.23	1.31	\$11,575	\$8,622	\$7,018	\$27,215
1	3214	519,383	296,898	222,485	\$3,426	\$27,503	\$437	8.03	1.50	\$11,228	\$9,182	\$7,093	\$27,503
1	3215	1,021,811	617,636	404,175	\$6,095	\$53,722	\$181	8.81	1.37	\$21,769	\$18,099	\$13,854	\$53,722
1	3216	1,063,888	628,952	435,036	\$6,108	\$42,640	\$396	6.98	1.73	\$17,230	\$14,414	\$10,996	\$42,640
1	3217	593,772	354,521	239,250	\$3,359	\$30,531	\$230	9.09	1.33	\$12,779	\$9,878	\$7,874	\$30,531
1	3218	792,697	451,273	341,423	\$5,459	\$51,203	\$791	9.38	1.29	\$20,699	\$17,299	\$13,205	\$51,203
1	6709	525,223	287,510	237,713	\$4,001	\$32,054	\$912	8.01	1.50	\$13,755	\$10,033	\$8,266	\$32,054
1	6710	644,985	340,943	304,042	\$5,218	\$37,909	\$1,041	7.26	1.66	\$15,397	\$12,736	\$9,776	\$37,909
1	6711	321,530	176,361	145,169	\$2,323	\$17,975	\$478	7.74	1.56	\$7,395	\$5,944	\$4,636	\$17,975
1	6712	449,422	238,109	211,313	\$3,860	\$22,592	\$927	6.17	1.95	\$9,177	\$7,589	\$5,828	\$22,592
1	6718	267,404	135,898	131,506	\$2,342	\$16,558	\$774	7.07	1.70	\$6,999	\$5,290	\$4,269	\$16,558
1	6719	327,441	175,604	151,837	\$2,442	\$17,390	\$657	7.12	1.69	\$7,479	\$5,426	\$4,485	\$17,390
1	6725	297,891	155,963	141,908	\$2,358	\$18,446	\$655	7.82	1.54	\$7,641	\$6,047	\$4,758	\$18,446
1	6726	295,772	156,864	138,908	\$2,800	\$15,946	\$682	6.58	1.83	\$6,752	\$5,082	\$4,112	\$15,946
1	6727	373,547	205,359	168,188	\$2,800	\$21,177	\$682	7.56	1.59	\$8,835	\$6,881	\$5,461	\$21,177
1	6728	442,693	327,655	115,038	\$6,833	\$47,102	\$2,080	6.89	1.74	\$16,118	\$18,837	\$12,147	\$47,102
1	6730	438,562	241,978	196,586	\$3,207	\$27,859	\$659	8.69	1.39	\$11,330	\$8,528	\$8,001	\$27,859
1	6731	494,042	269,867	224,175	\$3,465	\$23,870	\$501	6.89	1.75	\$9,615	\$8,099	\$6,156	\$23,870
1	6732	483,056	266,058	216,998	\$3,420	\$26,948	\$559	7.88	1.53	\$10,982	\$9,017	\$6,949	\$26,948
1	6733	471,603	264,545	207,058	\$3,101	\$27,954	\$396	9.01	1.34	\$11,614	\$9,131	\$7,209	\$27,954
SUBTOTAL		11,478,790	6,587,473	4,897,318	\$37,700	\$57,795	\$13,611	9.06	1.33	\$265,643	\$217,327	\$168,905	\$557,795

TABLE 6.1 PROJECT SUMMARY: INTERIOR LIGHTING AT KOREAN WAR BARRACKS PAGE 2 OF 2													
ECO NUMBER	BUILDING NUMBER	BASELINE ENERGY (MJ)	ECO ENERGY (MJ)	ENERGY SAVINGS (MJ)	1ST YEAR SAVINGS	INVESTMENT COSTS	ANNUAL RECURRING	SPB (YR)	SIR	MATERIAL COSTS	LABOR COSTS	ADDITIONAL COSTS*	TOTAL COST ESTIMATE
1	6909	418,778	244,983	173,795	\$2,647	\$23,058	\$455	8.71	1.39	\$9,406	\$7,707	\$5,945	\$23,058
1	6910	275,939	156,555	119,384	\$1,869	\$13,748	\$427	7.35	1.64	\$5,526	\$4,676	\$3,546	\$13,748
1	6911	525,156	316,406	208,750	\$3,203	\$32,528	\$396	10.16	1.19	\$13,390	\$10,750	\$8,388	\$32,528
1	6912	420,325	178,318	242,007	\$2,783	\$23,484	\$528	8.44	1.43	\$9,537	\$7,891	\$6,056	\$23,484
1	6917	599,011	362,752	236,259	\$3,325	\$32,078	\$396	9.65	1.25	\$13,153	\$10,653	\$8,272	\$32,078
1	6918	554,236	325,936	228,300	\$3,260	\$26,637	\$566	8.17	1.48	\$10,819	\$8,948	\$6,870	\$26,637
1	6919	634,674	369,035	265,639	\$4,000	\$33,657	\$678	8.41	1.44	\$13,182	\$11,785	\$8,680	\$33,657
1	6920	528,344	307,351	220,993	\$3,289	\$27,834	\$627	8.46	1.43	\$11,421	\$9,235	\$7,178	\$27,834
1	6923	555,798	345,262	210,536	\$2,779	\$29,484	\$132	10.61	1.14	\$12,198	\$9,683	\$7,603	\$29,484
1	6927	618,515	373,729	244,786	\$3,585	\$37,359	\$478	10.42	1.16	\$15,727	\$11,998	\$9,634	\$37,359
1	6928	551,605	320,267	231,338	\$3,503	\$28,774	\$655	8.21	1.47	\$11,661	\$9,692	\$7,421	\$28,774
1	6929	471,640	281,413	190,227	\$2,732	\$25,682	\$396	9.40	1.29	\$10,628	\$8,431	\$6,623	\$25,682
1	6930	659,472	397,262	262,210	\$3,784	\$38,184	\$455	10.09	1.20	\$15,827	\$12,510	\$9,847	\$38,184
1	6931	417,944	246,725	171,219	\$2,403	\$23,298	\$396	9.70	1.25	\$9,526	\$7,764	\$6,008	\$23,298
1	6936	381,338	224,018	157,320	\$2,226	\$18,707	\$396	8.40	1.44	\$7,710	\$6,173	\$4,824	\$18,707
1	6937	534,601	319,526	215,075	\$2,960	\$24,481	\$427	8.27	1.46	\$10,006	\$8,161	\$6,314	\$24,481
1	6938	600,961	352,495	248,466	\$3,604	\$31,194	\$509	8.66	1.40	\$12,728	\$10,421	\$8,045	\$31,194
1	6939	489,744	288,904	200,840	\$2,877	\$25,879	\$495	8.99	1.34	\$10,615	\$8,590	\$6,674	\$25,879
1	6940	549,608	331,557	218,251	\$3,082	\$26,137	\$408	8.48	1.43	\$10,687	\$8,709	\$6,741	\$26,137
1	6943	537,138	310,306	226,832	\$3,499	\$26,898	\$757	7.69	1.57	\$10,882	\$9,080	\$6,936	\$26,898
1	6944	547,375	328,904	218,471	\$3,129	\$33,288	\$408	10.64	1.14	\$13,816	\$10,887	\$8,585	\$33,288
1	6945	450,202	266,092	184,110	\$2,655	\$26,531	\$420	9.99	1.21	\$11,057	\$8,631	\$6,843	\$26,531
SUBTOTAL		11,322,604	6,647,796	4,674,808	\$67,794	\$608,920	\$10,406	7.98	1.61	\$249,602	\$202,366	\$167,033	\$608,920
TOTALS		22,801,394	13,229,269	9,572,124	\$148,894	\$1,260,715	\$24,016	8.47	1.43	\$515,065	\$419,712	\$325,938	\$1,260,715

*INCLUDES OVERHEAD, PROFIT, BOND, CONTINGENCIES, SIGN, AND DESIGN

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: ECO1KWBT
LCCID 1.080

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: ECO1KWBT INTERIOR LIGHTING - BARRACKS TOTAL

FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING

ANALYSIS DATE: 09-14-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLENSBE

1. INVESTMENT

A. CONSTRUCTION COST	\$	1146105.	
B. SIOH	\$	57305.	
C. DESIGN COST	\$	57305.	
D. TOTAL COST (1A+1B+1C)	\$	1260715.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	\$	0.	
F. PUBLIC UTILITY COMPANY REBATE	\$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)			\$ 1260715.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST \$/MBTU(1)	SAVINGS MBTU/YR(2)	ANNUAL \$ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	\$ 6.18	9279.	\$ 57344.	12.43	\$ 712789.
B. DIST	\$.00	0.	\$ 0.	13.56	\$ 0.
C. RESID	\$.00	0.	\$ 0.	15.09	\$ 0.
D. NAT G	\$.00	0.	\$ 0.	15.86	\$ 0.
E. COAL	\$.00	0.	\$ 0.	13.61	\$ 0.
F. LPG	\$.00	0.	\$ 0.	12.64	\$ 0.
M. DEMAND SAVINGS			\$ 67540.	11.85	\$ 800349.
N. TOTAL		9279.	\$ 124884.		\$ 1513138.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)

(1) DISCOUNT FACTOR (TABLE A)	11.85	\$ 24016.
(2) DISCOUNTED SAVING/COST (3A X 3A1)		\$ 284590.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+) COST(-) (4)
d. TOTAL	\$ 0.			0.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+) / COST(-) (3A2+3Bd4) \$ 284590.

4. FIRST YEAR DOLLAR SAVINGS $2N3+3A+(3Bd1/(YRS\ ECONOMIC\ LIFE))$ \$ 148900.

5. SIMPLE PAYBACK PERIOD (1G/4) 8.47 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 1797727.

7. SAVINGS TO INVESTMENT RATIO (SIR) = $(6 / 1G) =$ 1.43
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 5.57 %

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: BARRPRT1
LCCID 1.080

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: KWPRT1 INTERIOR LIGHTING - 3200 & 6700 BARRACKS

FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING

ANALYSIS DATE: 09-14-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLENSBE

1. INVESTMENT

A. CONSTRUCTION COST	\$	592541.	
B. SIOH	\$	29627.	
C. DESIGN COST	\$	29627.	
D. TOTAL COST (1A+1B+1C)	\$	651795.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	\$	0.	
F. PUBLIC UTILITY COMPANY REBATE	\$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)	\$		651795.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST \$/MBTU(1)	SAVINGS MBTU/YR(2)	ANNUAL \$ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	\$ 6.18	4900.	\$ 30282.	12.43	\$ 376405.
B. DIST	\$.00	0.	\$ 0.	13.56	\$ 0.
C. RESID	\$.00	0.	\$ 0.	15.09	\$ 0.
D. NAT G	\$.00	0.	\$ 0.	15.86	\$ 0.
E. COAL	\$.00	0.	\$ 0.	13.61	\$ 0.
F. LPG	\$.00	0.	\$ 0.	12.64	\$ 0.
M. DEMAND SAVINGS			\$ 37812.	11.85	\$ 448072.
N. TOTAL		4900.	\$ 68094.		\$ 824478.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)

(1) DISCOUNT FACTOR (TABLE A)	11.85	\$ 13611.
(2) DISCOUNTED SAVING/COST (3A X 3A1)		\$ 161290.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+) COST(-) (4)
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d. TOTAL \$ 0. 0.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-) (3A2+3Bd4) \$ 161290.

4. FIRST YEAR DOLLAR SAVINGS $2N3+3A+(3Bd1/(YRS\ ECONOMIC\ LIFE))$ \$ 81705.

5. SIMPLE PAYBACK PERIOD (1G/4) 7.98 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 985768.

7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G)= 1.51
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 5.98 %

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3211		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	8	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

REPLACEMENT FIXTURE DATA

EXISTING FIXTURE DATA		REPLACEMENT FIXTURE DATA	
2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS
4 FOOT	2 LAMP U	0.2 LAMP U @	58 W/FIXT =
8 FOOT	2 LAMP U	0.2 LAMP U @	0.00 WATTS
2 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS
4 FOOT	5 2 LAMP @	97 W/FIXT =	485 WATTS
8 FOOT	3 LAMP @	153 W/FIXT =	0 WATTS
	8 4 LAMP @	194 W/FIXT =	1,552 WATTS
	2 LAMP @	180 W/FIXT =	0 WATTS
	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
	5 2 LAMP @	58 W/FIXT =	290.00 WATTS
	0.3 LAMP @	87 W/FIXT =	0.00 WATTS
	8 4 LAMP @	118 W/FIXT =	944.00 WATTS
	0.2 LAMP @	125 W/FIXT =	0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	3,593 KWH/YR
BASELINE DEMAND		ECO DEMAND	12,936 MJ/YR
			1.23 KW

NET ENERGY SAVINGS	8,418 MJ/YR	NET DEMAND SAVINGS	\$114 /YR
NET ENERGY SAVINGS	8 MBTU/YR	NET DOLLAR SAVINGS	\$163 /YR

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3211		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12		
DAYS/WEEK	<u>7</u>		
BUILDING VOLTAGE:	277		
		ELECTRIC COSTS:	
		ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	<u>\$11.78 PER KW</u>

REPLACEMENT FIXTURE DATA

EXISTING FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT =	0 LAMP U @	58 W/FIXT =
2 LAMP U	0 WATTS	0 LAMP U @	0.00 WATTS
4 FOOT			
1 LAMP @	56 W/FIXT =	0 1 LAMP @	29 W/FIXT =
105 2 LAMP @	97 W/FIXT =	105 2 LAMP @	58 W/FIXT =
32 3 LAMP @	153 W/FIXT =	32 3 LAMP @	87 W/FIXT =
15 4 LAMP @	194 W/FIXT =	15 4 LAMP @	118 W/FIXT =
8 FOOT			
2 LAMP @	180 W/FIXT =	0 2 LAMP @	125 W/FIXT =
2 LAMP @	0 WATTS	0 2 LAMP @	0.00 WATTS

BASELINE ENERGY CONSUMPTION	78,585 KWH/YR 282,905 MJ/YR	ECO ENERGY CONSUMPTION	46,493 KWH/YR 167,375 MJ/YR
BASELINE DEMAND	17.99 KW	ECO DEMAND	10.64 KW

NET ENERGY SAVINGS	115,530 MJ/YR	NET DEMAND SAVINGS	\$1,039 /YR
NET ENERGY SAVINGS	109 MBTUYR	NET DOLLAR SAVINGS	\$1,717 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3211		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24		
DAYS/WEEK	7		
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:		
ENERGY CHARGE	\$0.0211	PER KWH
DEMAND CHARGE	\$11.78	PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
	51 2 LAMP @	97 W/FIXT =	4,947 WATTS	51 2 LAMP @	58 W/FIXT =	2,958.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0.00 WATTS
	4 LAMP @	194 W/FIXT =	0 WATTS	0.4 LAMP @	118 W/FIXT =	0.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0.00 WATTS

BASELINE ENERGY CONSUMPTION	43,217 KWH/YR	ECO ENERGY CONSUMPTION	25,841 KWH/YR
	155,581 MJ/YR		93,028 MJ/YR
BASELINE DEMAND	4.95 KW	ECO DEMAND	2.96 KW

NET ENERGY SAVINGS	62,563 MJ/YR	NET DEMAND SAVINGS	\$281 /YR
NET ENERGY SAVINGS	59 MBTU/YR	NET DOLLAR SAVINGS	\$648 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 3211

EXIT SIGNS 2 ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH

CURRENT WATTAGE 30 DEMAND CHARGE \$11.78 PER KW

REPLACEMENT WATTAG 3

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	525.6 KWH/YR	ECO ENERGY CONSUMPTION	52.56 KWH/YR
BASELINE DEMAND	0.06 KW	ECO DEMAND	0.01 KW

NET ENERGY SAVINGS	473 KWH/YR	NET DOLLAR SAVINGS	\$18
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=====
Estimate:      Bldg. 3211      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					157.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	57.15	\$0	\$1,570	\$0	\$0	\$1,570	
0207082121	DEMO. 2X4' FLUOR FIXTURES					57.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	27.65	\$0	\$761	\$0	\$0	\$761	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					2.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	0.64	\$0	\$18	\$0	\$0	\$18	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					0.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	0.00	\$0	\$0	\$0	\$0	\$0	
U02 SITEWORK	86	\$0	\$2,349	\$0	\$0	\$2,349	

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					2.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	2.00	\$370	\$55	\$0	\$0	\$425
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					48.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	67.39	\$4,224	\$1,848	\$0	\$0	\$6,072
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					2.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	3.02	\$168	\$83	\$0	\$0	\$251
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					32.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	51.20	\$2,880	\$1,408	\$0	\$0	\$4,288
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					23.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	39.10	\$2,162	\$1,081	\$0	\$0	\$3,243
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					82.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	93.48	\$5,986	\$2,583	\$0	\$0	\$8,569
1661309909	SUR FLUOR 1X4' W 2 32W T8					24.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	27.36	\$2,064	\$756	\$0	\$0	\$2,820
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					2.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	2.28	\$180	\$63	\$0	\$0	\$243
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	4.20	\$267	\$116	\$0	\$0	\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					0.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

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Totals

0.00

\$0

\$0

\$0

\$0

\$0

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=====
Line #      Description
-----
      Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      291    $18,301    $7,993          $0      $0    $26,294

ESTIMATE TOTAL      377    $18,301    $10,342          $0      $0    $28,643

SALES TAX           5.00%      $915
MATL MARKUP        -40.00%    ($7,320)
LABOR MARKUP       -13.40%    ($1,386)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $11,896    $8,956          $0      $0    $20,852
CONTINGENCY          10.00%      $2,085
BOND                  2.50%      $521
PROFIT                10.00%      $2,085

JOB TOTAL                                $25,543
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=====
Estimate:      Bldg. 3211      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      86      $0      $2,349      $0      $0      $2,349
U16 ELECTRICAL   291    $18,301    $7,993      $0      $0    $26,294
TOTAL            377    $18,301    $10,342     $0      $0    $28,643

SALES TAX         5.00%      $915
MATL MARKUP       -40.00%    ($7,320)
LABOR MARKUP      -13.40%    ($1,386)
EQUIPT MARKUP     0.00%
SUB MARKUP        0.00%

TOTAL BEFORE CONTINGENC $11,896    $8,956     $0      $0    $20,852
CONTINGENCY        10.00%      $2,085
BOND                2.50%      $521
PROFIT             10.00%      $2,085
JOB TOTAL                                $25,543

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3212
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS
 3 2 LAMP @ 97 W/FIXT = 291 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 15 4 LAMP @ 194 W/FIXT = 2,910 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 3 2 LAMP @ 58 W/FIXT = 174.00 WATTS
 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 15 4 LAMP @ 118 W/FIXT = 1,770.00 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 9,321 KWH/YR ECO ENERGY CONSUMPTION 5,661 KWH/YR
 33,557 MJ/YR 20,379 MJ/YR

BASELINE DEMAND 3.20 KW ECO DEMAND 1.94 KW

NET ENERGY SAVINGS 13,177 MJ/YR NET DEMAND SAVINGS \$178 /YR
 NET ENERGY SAVINGS 12 MBTU/YR NET DOLLAR SAVINGS \$255 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3212		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE	277		

EXISTING FIXTURE DATA

2 FOOT	2 2 LAMP U	97 W/FIXT =	194 WATTS	2 2 LAMP U @	58 W/FIXT =	116 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS
	28 2 LAMP @	97 W/FIXT =	2,716 WATTS	28 2 LAMP @	58 W/FIXT =	1,624 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0 WATTS
	148 4 LAMP @	194 W/FIXT =	28,712 WATTS	148 4 LAMP @	118 W/FIXT =	17,464 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	138,125 KWH/YR	ECO ENERGY CONSUMPTION	83,883 KWH/YR
	497,250 MJ/YR		301,979 MJ/YR
BASELINE DEMAND	31.62 KW	ECO DEMAND	19.20 KW

NET ENERGY SAVINGS	195,271 MJ/YR	NET DEMAND SAVINGS	\$1,755 /YR
NET ENERGY SAVINGS	185 MBTU/YR	NET DOLLAR SAVINGS	\$2,902 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3212
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
	57 2 LAMP @	97 W/FIXT =	5,529 WATTS	57 2 LAMP @	58 W/FIXT =	3,306.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0.00 WATTS
	4 LAMP @	194 W/FIXT =	0 WATTS	0.4 LAMP @	118 W/FIXT =	0.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	48,301 KWH/YR	ECO ENERGY CONSUMPTION	28,881 KWH/YR
BASELINE DEMAND	173,885 MJ/YR	ECO DEMAND	103,972 MJ/YR
	5.53 KW		3.31 KW

NET ENERGY SAVINGS	69,912 MJ/YR	NET DEMAND SAVINGS	\$314 /YR
NET ENERGY SAVINGS	66 MBTU/YR	NET DOLLAR SAVINGS	\$725 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #:

BARRACKS - 3212

EXIT SIGNS

4

CURRENT WATTAGE

30

REPLACEMENT WATTAG

3

HOURS/YEAR

8760

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

BASELINE ENERGY CONSUMPTION
BASELINE DEMAND

1051 KWH/YR
0.12 KW

ECO ENERGY CONSUMPTION
ECO DEMAND

105.1 KWH/YR
0.01 KW

NET ENERGY SAVINGS

946 KWH/YR

NET DOLLAR SAVINGS

\$35

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=====
Estimate:      Bldg. 3212      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					90.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		32.76	\$0	\$900	\$0	\$0	\$900
0207082121	DEMO. 2X4' FLUOR FIXTURES					163.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		79.06	\$0	\$2,176	\$0	\$0	\$2,176
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					4.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		1.03	\$0	\$28	\$0	\$0	\$28
U02 SITEWORK		113	\$0	\$3,104	\$0	\$0	\$3,104

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					4.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	4.00	\$740	\$110	\$0	\$0	\$850
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					57.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	80.03	\$5,016	\$2,195	\$0	\$0	\$7,211
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					163.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	277.10	\$15,322	\$7,661	\$0	\$0	\$22,983
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					30.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	34.20	\$2,190	\$945	\$0	\$0	\$3,135
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	4.20	\$267	\$116	\$0	\$0	\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					0.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					0.00 EA
Unit values	1.00	25.50	27.50	0.00	0.00	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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=====
Line #      Description
-----
      Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      400    $23,535    $11,027          $0      $0    $34,562

ESTIMATE TOTAL      513    $23,535    $14,131          $0      $0    $37,666

SALES TAX           5.00%    $1,177
MATL MARKUP        -40.00%   ($9,414)
LABOR MARKUP       -13.40%   ($1,894)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $15,298    $12,237          $0      $0    $27,535
CONTINGENCY         10.00%                $2,754
BOND                 2.50%                $688
PROFIT              10.00%                $2,754

JOB TOTAL                                     $33,731
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=====
Estimate:      Bldg. 3212      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      113      $0      $3,104      $0      $0      $3,104
U16 ELECTRICAL    400    $23,535    $11,027      $0      $0    $34,562
TOTAL              513    $23,535    $14,131      $0      $0    $37,666

SALES TAX          5.00%    $1,177
MATL MARKUP       -40.00%   ($9,414)
LABOR MARKUP      -13.40%      ($1,894)
EQUIPT MARKUP      0.00%      $0
SUB MARKUP         0.00%      $0

TOTAL BEFORE CONTINGENC $15,298    $12,237      $0      $0    $27,535
CONTINGENCY        10.00%      $2,754
BOND                2.50%      $688
PROFIT              10.00%      $2,754
JOB TOTAL                                $33,731

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3213
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 LAMP U	97 W/FIXT =	0 WATTS	0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT		1 LAMP @	56 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0.00 WATTS
		8 2 LAMP @	97 W/FIXT =	776 WATTS	8 2 LAMP @	58 W/FIXT =	464.00 WATTS
		3 LAMP @	153 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0.00 WATTS
		23 4 LAMP @	194 W/FIXT =	4,462 WATTS	23 4 LAMP @	118 W/FIXT =	2,714.00 WATTS
8 FOOT		2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0.00 WATTS

BASELINE ENERGY CONSUMPTION	15,253 KWH/YR	ECO ENERGY CONSUMPTION	9,254 KWH/YR
	54,911 MJ/YR		33,316 MJ/YR
BASELINE DEMAND	5.24 KW	ECO DEMAND	3.18 KW

NET ENERGY SAVINGS	21,595 MJ/YR	NET DEMAND SAVINGS	\$291 /YR
NET ENERGY SAVINGS	20 MBTU/YR	NET DOLLAR SAVINGS	\$418 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3213		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS
	52 2 LAMP @	97 W/FIXT =	5,044 WATTS
	18 3 LAMP @	153 W/FIXT =	2,754 WATTS
	22 4 LAMP @	194 W/FIXT =	4,268 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0.00 WATTS
	52 2 LAMP @	58 W/FIXT =	3,016.00 WATTS
	18 3 LAMP @	87 W/FIXT =	1,566.00 WATTS
	22 4 LAMP @	118 W/FIXT =	2,596.00 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0.00 WATTS

BASELINE ENERGY CONSUMPTION	52,704 KWH/YR	ECO ENERGY CONSUMPTION	31,354 KWH/YR
	189,735 MJ/YR		112,873 MJ/YR
BASELINE DEMAND	12.07 KW	ECO DEMAND	7.18 KW

NET ENERGY SAVINGS	76,863 MJ/YR	NET DEMAND SAVINGS	\$691 /YR
NET ENERGY SAVINGS	73 MBTU/YR	NET DOLLAR SAVINGS	\$1,142 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3213
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT			
2 LAMP U	87 W/FIXT =	0 WATTS	0.2 LAMP U @ 58 W/FIXT = 0.00 WATTS
4 FOOT			
1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @ 29 W/FIXT = 0.00 WATTS
78 2 LAMP @	97 W/FIXT =	7,566 WATTS	58 W/FIXT = 4,524.00 WATTS
3 LAMP @	153 W/FIXT =	0 WATTS	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT =	0 WATTS	118 W/FIXT = 0.00 WATTS
8 FOOT			
2 LAMP @	180 W/FIXT =	0 WATTS	125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	66,097 KWH/YR	ECO ENERGY CONSUMPTION	39,522 KWH/YR
	237,948 MJ/YR		142,278 MJ/YR
BASELINE DEMAND	7.57 KW	ECO DEMAND	4.52 KW

NET ENERGY SAVINGS 95,670 MJ/YR
 NET ENERGY SAVINGS 91 MBTU/YR
 NET DEMAND SAVINGS \$430 /YR
 NET DOLLAR SAVINGS \$992 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 3213

EXIT SIGNS 8 ELECTRIC COSTS:
 CURRENT WATTAGE 30 ENERGY CHARGE \$0.0211 PER KWH
 REPLACEMENT WATTAG 3 DEMAND CHARGE \$11.78 PER KW

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	2102 KWH/YR	ECO ENERGY CONSUMPTION	210.2 KWH/YR
BASELINE DEMAND	0.24 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1892 KWH/YR	NET DOLLAR SAVINGS	\$71
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Estimate:      Bldg. 3213      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					127.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		46.23	\$0	\$1,270	\$0	\$0	\$1,270
0207082121	DEMO. 2X4' FLUOR FIXTURES					74.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		35.89	\$0	\$988	\$0	\$0	\$988
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					8.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		2.06	\$0	\$57	\$0	\$0	\$57
U02 SITEWORK		85	\$0	\$2,315	\$0	\$0	\$2,315

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					8.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	8.00	\$1,480	\$220	\$0	\$0		\$1,700
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					2.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	2.81	\$176	\$77	\$0	\$0		\$253
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					11.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	16.61	\$924	\$457	\$0	\$0		\$1,381
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					18.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	28.80	\$1,620	\$792	\$0	\$0		\$2,412
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					45.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	76.50	\$4,230	\$2,115	\$0	\$0		\$6,345
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					107.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	121.98	\$7,811	\$3,371	\$0	\$0		\$11,182
1661309909	SUR FLUOR 1X4' W 2 32W T8					12.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	13.68	\$1,032	\$378	\$0	\$0		\$1,410
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					6.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	8.40	\$534	\$231	\$0	\$0		\$765
1661388040	COMP FLUOR LAMP, 26 W QUAD					0.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals

0.00

\$0

\$0

\$0

\$0

\$0

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=====
Line #      Description
-----
      Manhours   Matl     Labor   Equipment   Sub     Total
=====
U16 ELECTRICAL      277    $17,807    $7,641         $0         $0    $25,448

ESTIMATE TOTAL      362    $17,807    $9,956         $0         $0    $27,763

SALES TAX           5.00%      $890
MATL MARKUP        -40.00%    ($7,123)
LABOR MARKUP       -13.40%    ($1,334)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $11,575    $8,622         $0         $0    $20,196
CONTINGENCY          10.00%                $2,020
BOND                  2.50%                $505
PROFIT                10.00%                $2,020

JOB TOTAL                                $24,741
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Estimate:      Bldg. 3213      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:   City indx:
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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      85      $0      $2,315      $0      $0      $2,315
U16 ELECTRICAL   277    $17,807    $7,641      $0      $0    $25,448
TOTAL            362    $17,807    $9,956      $0      $0    $27,763

SALES TAX          5.00%      $890
MATL MARKUP       -40.00%    ($7,123)
LABOR MARKUP      -13.40%    ($1,334)
EQUIPT MARKUP      0.00%      $0
SUB MARKUP         0.00%      $0

TOTAL BEFORE CONTINGENC $11,575    $8,622      $0      $0    $20,196
CONTINGENCY        10.00%      $2,020
BOND                2.50%      $505
PROFIT             10.00%      $2,020
JOB TOTAL                                $24,741

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3214		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	8	\$0.0215	PER KWH
DAYS/WEEK	7	\$12.01	PER KW
BUILDING VOLTAGE	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS
	11 2 LAMP @	97 W/FIXT =	1,067 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS
	21 4 LAMP @	194 W/FIXT =	4,074 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	11 2 LAMP @	58 W/FIXT =	638 WATTS
	0 3 LAMP @	87 W/FIXT =	0 WATTS
	21 4 LAMP @	118 W/FIXT =	2,478 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	14,971 KWH/YR	ECO ENERGY CONSUMPTION	9,074 KWH/YR
	53,894 MJ/YR		32,666 MJ/YR
BASELINE DEMAND	5.14 KW	ECO DEMAND	3.12 KW

NET ENERGY SAVINGS	21,228 MJ/YR	NET DEMAND SAVINGS	\$292 /YR
NET ENERGY SAVINGS	20 MBTU/YR	NET DOLLAR SAVINGS	\$419 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3214		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	87 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
	32 2 LAMP @	97 W/FIXT =	3,104 WATTS	32 2 LAMP @	58 W/FIXT =	1,856.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0.00 WATTS
	80 4 LAMP @	194 W/FIXT =	15,520 WATTS	80 4 LAMP @	118 W/FIXT =	9,440.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	81,350 KWH/YR	ECO ENERGY CONSUMPTION	49,341 KWH/YR
	292,859 MJ/YR		177,627 MJ/YR
BASELINE DEMAND	18.62 KW	ECO DEMAND	11.30 KW

NET ENERGY SAVINGS	115,231 MJ/YR	NET DEMAND SAVINGS	\$1,036 /YR
NET ENERGY SAVINGS	109 MBTU/YR	NET DOLLAR SAVINGS	\$1,713 /YR

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3214		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24		
DAYS/WEEK	<u>7</u>		
		ELECTRIC COSTS:	
		ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	<u>\$11.78</u> PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT	2 FOOT	2 FOOT	2 FOOT
2 LAMP U	2 LAMP U	0.2 LAMP U @	0.00 WATTS
97 W/FXT =	0 WATTS	58 W/FXT =	0.00 WATTS

4 FOOT				4 FOOT			
1 LAMP @	56 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0.00 WATTS		
47 2 LAMP @	97 W/FIXT =	4,559 WATTS	47 2 LAMP @	58 W/FIXT =	2,726.00 WATTS		
3 LAMP @	153 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0.00 WATTS		
4 LAMP @	194 W/FIXT =	0 WATTS	0 4 LAMP @	118 W/FIXT =	0.00 WATTS		

8 FOOT	8 FOOT
2 AMP @ 180 WEXT # 0 WATTS	0.2 AMP @ 125 WEXT # 0.00 WATTS

BASELINE ENERGY CONSUMPTION	39,827 KWH/YR	23,814 KWH/YR
ECO ENERGY CONSUMPTION	143,379 MJ/YR	85,732 MJ/YR

Project	Baseline Demand	4.56 KW	ECO DEMAND	2.73 KW
Project				

NET ENERGY SAVINGS	57,647 MJ/YR	NET DEMAND SAVINGS	\$259 /YR
NET ENERGY SAVINGS	55 MBTUYR	NET DOLLAR SAVINGS	\$598 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3214-BARRACKS
 AREA: STAIRWELL
 LAMP USE: 24
 HOURS/DAY 7
 DAYS/WEEK 1 (1-YES, 2-NO)
 PEAK USE

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS =	0 WATTS	0 LAMPS @ 13 WATTS =	0 WATTS
LAMPS @ 60 WATTS =	0 WATTS	12 LAMPS @ 18 WATTS =	216 WATTS
12 LAMPS @ 75 WATTS =	900 WATTS	0 LAMPS @ 26 WATTS =	0 WATTS
LAMPS @ 90 WATTS =	0 WATTS		
LAMPS @ 135 WATTS =	0 WATTS		

COMPACT FLUORESCENT REPLACEMENT

BASELINE ENERGY CONSUMPTION	7,862 KWH	ECO ENERGY CONSUMPTION	216 KWH
	28,305 MJ		778 MJ
BASELINE DEMAND	0.90 KW	ECO DEMAND	0.22 KW

NET ENERGY SAVINGS	27,527 MJ/YR	NET DEMAND SAVINGS	\$97 /YR
NET ENERGY SAVINGS	26 MBTU/YR	NET DOLLAR SAVINGS	\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 3214

EXIT SIGNS 1 ELECTRIC COSTS:
 CURRENT WATTAGE 30 ENERGY CHARGE \$0.0211 PER KWH
 REPLACEMENT WATTAG 3 DEMAND CHARGE \$11.78 PER KW
 HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	262.8 KWH/YR	ECO ENERGY CONSUMPTION	26.28 KWH/YR
BASELINE DEMAND	0.03 KW	ECO DEMAND	0.00 KW

NET ENERGY SAVINGS	237 KWH/YR	NET DOLLAR SAVINGS	\$9
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Estimate:      Bldg. 3214      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell   Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					71.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00		10.00
Totals	25.84	\$0	\$710	\$0	\$0		\$710
0207082121	DEMO. 2X4' FLUOR FIXTURES					111.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	53.84	\$0	\$1,482	\$0	\$0		\$1,482
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					9.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00		8.80
Totals	2.88	\$0	\$79	\$0	\$0		\$79
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					13.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	3.35	\$0	\$92	\$0	\$0		\$92
U02 SITEWORK	86	\$0	\$2,363	\$0	\$0		\$2,363

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					1.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	1.00	\$185	\$28	\$0	\$0		\$213
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					43.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	60.37	\$3,784	\$1,656	\$0	\$0		\$5,440
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					10.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	15.10	\$840	\$415	\$0	\$0		\$1,255
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					101.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	171.70	\$9,494	\$4,747	\$0	\$0		\$14,241
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					28.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	31.92	\$2,044	\$882	\$0	\$0		\$2,926
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					9.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	12.60	\$801	\$347	\$0	\$0		\$1,148
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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=====
Line #      Description
-----
      Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      299    $17,274    $8,240          $0      $0    $25,514

ESTIMATE TOTAL      385    $17,274    $10,603          $0      $0    $27,877

SALES TAX           5.00%      $864
MATL MARKUP        -40.00%    ($6,910)
LABOR MARKUP       -13.40%    ($1,421)
EQUIPT MARKUP       0.00%          $0
SUB MARKUP          0.00%          $0

TOTAL BEFORE CONTINGENC $11,228    $9,182          $0      $0    $20,410
CONTINGENCY          10.00%          $2,041
BOND                  2.50%          $510
PROFIT                10.00%          $2,041

JOB TOTAL                                $25,003
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=====
Estimate:      Bldg. 3214      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      86      $0      $2,363      $0      $0      $2,363
U16 ELECTRICAL    299    $17,274    $8,240      $0      $0    $25,514
TOTAL              385    $17,274    $10,603      $0      $0    $27,877

SALES TAX          5.00%      $864
MATL MARKUP        -40.00%    ($6,910)
LABOR MARKUP        -13.40%    ($1,421)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $11,228    $9,182      $0      $0    $20,410
CONTINGENCY          10.00%
BOND                  2.50%
PROFIT                10.00%

JOB TOTAL                                $25,003

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3215
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 5
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 LAMP U	97 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT		1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
		2 LAMP @	97 W/FIXT =	0 WATTS	0.2 LAMP @	58 W/FIXT =	0.00 WATTS
		3 LAMP @	153 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0.00 WATTS
		33 4 LAMP @	194 W/FIXT =	6,402 WATTS	33 4 LAMP @	118 W/FIXT =	3,894.00 WATTS
8 FOOT		2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0.00 WATTS
BASELINE ENERGY CONSUMPTION		13,316 KWH/YR	ECO ENERGY CONSUMPTION	8,100 KWH/YR			
BASELINE DEMAND		47,938 MJ/YR	ECO DEMAND	29,158 MJ/YR			
		6.40 KW		3.89 KW			

NET ENERGY SAVINGS	18,780 MJ/YR	NET DEMAND SAVINGS	\$355 /YR
NET ENERGY SAVINGS	18 MBTU/YR	NET DOLLAR SAVINGS	\$465 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3215		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	8	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
8 2 LAMP @	97 W/FIXT = 776 WATTS	8 2 LAMP @	58 W/FIXT = 464.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
8 4 LAMP @	194 W/FIXT = 1,552 WATTS	8 4 LAMP @	118 W/FIXT = 944.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
6,779 KWH/YR		4,100 KWH/YR	
24,405 MJ/YR		14,760 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
2.33 KW		1.41 KW	

NET ENERGY SAVINGS	9,645 MJ/YR	NET DEMAND SAVINGS	\$130 /YR
NET ENERGY SAVINGS	9 MBTU/YR	NET DOLLAR SAVINGS	\$187 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3215		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
2 LAMP @	97 W/FIXT = 0 WATTS	0 2 LAMP @	58 W/FIXT = 0 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS
252 4 LAMP @	194 W/FIXT = 48,888 WATTS	252 4 LAMP @	118 W/FIXT = 29,736 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
213,543 KWH/YR		129,887 KWH/YR	
768,754 MJ/YR		467,593 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
48.89 KW		29.74 KW	

NET ENERGY SAVINGS	301,161 MJ/YR	NET DEMAND SAVINGS	\$2,707 YR
NET ENERGY SAVINGS	285 MBTU/YR	NET DOLLAR SAVINGS	\$4,476 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3215		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
58 2 LAMP @	97 W/FIXT = 5,626 WATTS	58 2 LAMP @	58 W/FIXT = 3,364.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
49,149 KWH/YR		29,388 KWH/YR	
176,935 MJ/YR		105,796 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
5.63 KW		3.36 KW	

NET ENERGY SAVINGS	71,139 MJ/YR	NET DEMAND SAVINGS	\$320 /YR
NET ENERGY SAVINGS	67 MBTU/YR	NET DOLLAR SAVINGS	\$738 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3215-BARRACKS
AREA: RESTROOMS

LAMP USE: 8
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS	0	WATTS	39	WATTS
3 LAMPS @	60	WATTS	180	WATTS	13	WATTS
LAMPS @	75	WATTS	0	WATTS	18	WATTS
LAMPS @	90	WATTS	0	WATTS	26	WATTS
LAMPS @	100	WATTS	0	WATTS	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	3	LAMPS @	13	WATTS	39	WATTS
0 LAMPS @	0	LAMPS @	18	WATTS	0	WATTS
0 LAMPS @	0	LAMPS @	26	WATTS	0	WATTS

BASELINE ENERGY CONSUMPTION

524 KWH	ECO ENERGY CONSUMPTION	114 KWH
1,887 MJ		409 MJ
0.18 KW	ECO DEMAND	0.04 KW

NET ENERGY SAVINGS

1,478 MJ/YR	NET DEMAND SAVINGS	\$20 /YR
1.40 MBTU/YR	NET DOLLAR SAVINGS	\$29 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

BUILDING #: 3215 - BARRACKS

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

INCANDESCENT EXIT SIGNS	FLUORESCENT EXIT SIGNS	REPLACEMENT FIXTURE
# EXIT SIGNS 2	# EXIT SIGNS 0	# EXIT SIGNS 2
WATTAGE 30	WATTAGE 18	WATTAGE 3

BASELINE ENERGY CONSUMPTION	526 KWH/YR	ECO ENERGY CONSUMPTION	53 KWH/YR
	1,892 MJ/YR		189 MJ/YR
BASELINE DEMAND	0.06 KW	ECO DEMAND	0.01 KW

NET ENERGY SAVINGS	1,703 MJ/YR	NET DEMAND SAVINGS	\$8 /YR
NET ENERGY SAVINGS	1.61 MBTU/YR	NET DOLLAR SAVINGS	\$18 /YR

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Estimate:      Bldg. 3215          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:      Ft. Campbell       Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					59.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		21.48	\$0	\$590	\$0	\$0	\$590
0207082121	DEMO. 2X4' FLUOR FIXTURES					300.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		145.50	\$0	\$4,005	\$0	\$0	\$4,005
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					5.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		1.29	\$0	\$36	\$0	\$0	\$36
U02 SITEWORK		169	\$0	\$4,631	\$0	\$0	\$4,631

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					
Unit values	1.00	185.00	27.50	0.00	2.00 EA 0.00	212.50
Totals	2.00	\$370	\$55	\$0	\$0	\$425
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					
Unit values	1.40	88.00	38.50	0.00	30.00 EA 0.00	126.50
Totals	42.12	\$2,640	\$1,155	\$0	\$0	\$3,795
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.51	84.00	41.50	0.00	7.00 EA 0.00	125.50
Totals	10.57	\$588	\$291	\$0	\$0	\$879
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					
Unit values	1.60	90.00	44.00	0.00	0.00 EA 0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					
Unit values	1.70	94.00	47.00	0.00	293.00 EA 0.00	141.00
Totals	498.10	\$27,542	\$13,771	\$0	\$0	\$41,313
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.14	73.00	31.50	0.00	17.00 EA 0.00	104.50
Totals	19.38	\$1,241	\$536	\$0	\$0	\$1,777
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	12.00 EA 0.00	117.50
Totals	13.68	\$1,032	\$378	\$0	\$0	\$1,410
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	0.00 EA 0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					
Unit values	1.40	89.00	38.50	0.00	0.00 EA 0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					
Unit values	0.50	10.50	13.75	0.00	0.00 EA 0.00	24.25

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	3.00 EA	0.00
Totals	3.00	\$77	\$83	\$0	\$0	53.00
						\$160

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=====
Line #      Description
-----
            Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      589    $33,490    $16,269          $0        $0    $49,759

ESTIMATE TOTAL      758    $33,490    $20,900          $0        $0    $54,390

SALES TAX           5.00%     $1,675
MATL MARKUP        -40.00%   ($13,396)
LABOR MARKUP       -13.40%          ($2,801)
EQUIPT MARKUP       0.00%          $0
SUB MARKUP          0.00%          $0

TOTAL BEFORE CONTINGENC $21,769    $18,099          $0        $0    $39,868
CONTINGENCY          10.00%          $3,987
BOND                  2.50%          $997
PROFIT               10.00%          $3,987

JOB TOTAL                                $48,838
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Estimate:      Bldg. 3215      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell   Job #:
Sq. footage:   City indx:
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SUMMARY

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              Manhours   Matl      Labor    Equipment    Sub      Total
=====
U02 SITEWORK      169        $0      $4,631        $0        $0      $4,631
U16 ELECTRICAL    589      $33,490    $16,269        $0        $0      $49,759
TOTAL              758      $33,490    $20,900        $0        $0      $54,390

SALES TAX          5.00%      $1,675
MATL MARKUP       -40.00%   ($13,396)
LABOR MARKUP      -13.40%           ($2,801)
EQUIPT MARKUP      0.00%           $0
SUB MARKUP         0.00%           $0

TOTAL BEFORE CONTINGENC $21,769    $18,099        $0        $0      $39,868
CONTINGENCY        10.00%           $3,987
BOND                2.50%           $997
PROFIT              10.00%           $3,987
JOB TOTAL                                $48,838

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3216
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 23 2 LAMP U 97 W/FIXT = 2,231 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 217 4 LAMP @ 194 W/FIXT = 42,098 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 23 2 LAMP U @ 58 W/FIXT = 1,334 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 0 2 LAMP @ 58 W/FIXT = 0 WATTS
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 217 4 LAMP @ 118 W/FIXT = 25,606 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 193,629 KWH/YR ECO ENERGY CONSUMPTION 117,674 KWH/YR
 697,065 MJ/YR 423,626 MJ/YR
 BASELINE DEMAND 44.33 KW ECO DEMAND 26.94 KW

NET ENERGY SAVINGS 273,439 MJ/YR NET DEMAND SAVINGS \$2,458 /YR
 NET ENERGY SAVINGS 259 MBTU/YR NET DOLLAR SAVINGS \$4,064 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3216
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
45 2 LAMP @	97 W/FIXT = 4,365 WATTS	45 2 LAMP @	58 W/FIXT = 2,610.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
33 4 LAMP @	194 W/FIXT = 6,402 WATTS	33 4 LAMP @	118 W/FIXT = 3,894.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
94,061 KWH/YR		56,819 KWH/YR	
338,618 MJ/YR		204,548 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
10.77 KW		6.50 KW	

NET ENERGY SAVINGS	134,070 MJ/YR	NET DEMAND SAVINGS	\$603 /YR
NET ENERGY SAVINGS	127 MBTU/YR	NET DOLLAR SAVINGS	\$1,390 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3216-BARRACKS

AREA: STAIRWELLS

LAMP USE:

HOURS/DAY 24

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52	WATTS = 0	WATTS
LAMPS @ 60	WATTS = 0	WATTS
12 LAMPS @ 75	WATTS = 900	WATTS
LAMPS @ 90	WATTS = 0	WATTS
LAMPS @ 135	WATTS = 0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS = 0
12 LAMPS @	18	WATTS = 216
0 LAMPS @	26	WATTS = 0

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

28 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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Estimate:      Bldg. 3216          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:      Ft. Campbell       Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					68.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		24.75	\$0	\$680	\$0	\$0	\$680
0207082121	DEMO. 2X4' FLUOR FIXTURES					217.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		105.25	\$0	\$2,897	\$0	\$0	\$2,897
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					12.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.10	\$0	\$85	\$0	\$0	\$85
U02 SITEWORK		134	\$0	\$3,662	\$0	\$0	\$3,662

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA	
Unit values	1.00	185.00		27.50	0.00	0.00	212.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					68.00 EA	
Unit values	1.40	88.00		38.50	0.00	0.00	126.50
Totals	95.47	\$5,984		\$2,618	\$0	\$0	\$8,602
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00		41.50	0.00	0.00	125.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.60	90.00		44.00	0.00	0.00	134.00
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					217.00 EA	
Unit values	1.70	94.00		47.00	0.00	0.00	141.00
Totals	368.90	\$20,398		\$10,199	\$0	\$0	\$30,597
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.14	73.00		31.50	0.00	0.00	104.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00		31.50	0.00	0.00	117.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00		31.50	0.00	0.00	121.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.40	89.00		38.50	0.00	0.00	127.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50		13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		471	\$26,508	\$12,982	\$0	\$0	\$39,490
ESTIMATE TOTAL		605	\$26,508	\$16,644	\$0	\$0	\$43,152
SALES TAX	5.00%		\$1,325				
MATL MARKUP	-40.00%		(\$10,603)				
LABOR MARKUP	-13.40%			(\$2,230)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$17,230	\$14,414	\$0	\$0	\$31,644
CONTINGENCY	10.00%						\$3,164
BOND	2.50%						\$791
PROFIT	10.00%						\$3,164
JOB TOTAL							\$38,764

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Estimate:      Bldg. 3216      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      134      $0      $3,662      $0      $0      $3,662
U16 ELECTRICAL    471    $26,508    $12,982      $0      $0    $39,490
TOTAL              605    $26,508    $16,644      $0      $0    $43,152

SALES TAX          5.00%      $1,325
MATL MARKUP        -40.00%    ($10,603)
LABOR MARKUP        -13.40%      ($2,230)
EQUIPT MARKUP       0.00%      $0
SUB MARKUP          0.00%      $0

TOTAL BEFORE CONTINGENC  $17,230  $14,414  $0      $0    $31,644
CONTINGENCY          10.00%      $3,164
BOND                  2.50%      $791
PROFIT               10.00%      $3,164
JOB TOTAL                                $38,764

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3217
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 87 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS
 12 2 LAMP @ 97 W/FIXT = 1,164 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 23 4 LAMP @ 194 W/FIXT = 4,462 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 12 2 LAMP @ 58 W/FIXT = 696.00 WATTS
 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 23 4 LAMP @ 118 W/FIXT = 2,714.00 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 16,383 KWH/YR ECO ENERGY CONSUMPTION 9,930 KWH/YR
 58,978 MJ/YR 35,748 MJ/YR
 BASELINE DEMAND 5.63 KW ECO DEMAND 3.41 KW

NET ENERGY SAVINGS 23,231 MJ/YR NET DEMAND SAVINGS \$313 /YR
 NET ENERGY SAVINGS 22 MBTU/YR NET DOLLAR SAVINGS \$450 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3217		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
37 2 LAMP @	97 W/FIXT = 3,589 WATTS	37 2 LAMP @	58 W/FIXT = 2,146.00 WATTS
4 3 LAMP @	153 W/FIXT = 612 WATTS	4 3 LAMP @	87 W/FIXT = 348.00 WATTS
58 4 LAMP @	194 W/FIXT = 11,252 WATTS	58 4 LAMP @	118 W/FIXT = 6,844.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION	67,499 KWH/YR	ECO ENERGY CONSUMPTION	40,788 KWH/YR
	242,995 MJ/YR		146,838 MJ/YR
BASELINE DEMAND	15.45 KW	ECO DEMAND	9.34 KW

NET ENERGY SAVINGS	96,157 MJ/YR	NET DEMAND SAVINGS	\$864 /YR
NET ENERGY SAVINGS	91 MBTU/YR	NET DOLLAR SAVINGS	\$1,429 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3217		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA			
2 FOOT			
2 LAMP @	97 W/FIXT =	0 WATTS	0.2 LAMP @ 58 W/FIXT = 0.00 WATTS
4 FOOT			
1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @ 29 W/FIXT = 0.00 WATTS
94 2 LAMP @	97 W/FIXT =	9,118 WATTS	58 W/FIXT = 5,452.00 WATTS
3 LAMP @	153 W/FIXT =	0 WATTS	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT =	0 WATTS	118 W/FIXT = 0.00 WATTS
8 FOOT			
2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA			
2 FOOT			
4 FOOT			
8 FOOT			
BASELINE ENERGY CONSUMPTION	79,655 KWH/YR	ECO ENERGY CONSUMPTION	47,629 KWH/YR
	286,757 MJ/YR		171,463 MJ/YR
BASELINE DEMAND	9.12 KW	ECO DEMAND	5.45 KW

NET ENERGY SAVINGS	115,294 MJ/YR	NET DEMAND SAVINGS	\$518 /YR
NET ENERGY SAVINGS	109 MBTU/YR	NET DOLLAR SAVINGS	\$1,195 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3217-BARRACKS

AREA: RESTROOMS

LAMP USE:

HOURS/DAY 8

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
2 LAMPS @	60	WATTS =	120	WATTS
LAMPS @	75	WATTS =	0	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

2 LAMPS @	13	WATTS =	26	WATTS
0 LAMPS @	18	WATTS =	0	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

349 KWH
1,258 MJ

ECO ENERGY CONSUMPTION

26 KWH
94 MJ

BASELINE DEMAND

0.12 KW

ECO DEMAND

0.03 KW

NET ENERGY SAVINGS

1,164 MJ/YR

NET DEMAND SAVINGS

\$13 /YR

NET ENERGY SAVINGS

1 MBTU/YR

NET DOLLAR SAVINGS

\$20 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 3217

EXIT SIGNS 4 ELECTRIC COSTS:
 CURRENT WATTAGE 30 ENERGY CHARGE \$0.0211 PER KWH
 REPLACEMENT WATTAG 3 DEMAND CHARGE \$11.78 PER KW
 HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	1051 KWH/YR	ECO ENERGY CONSUMPTION	105.1 KWH/YR
BASELINE DEMAND	0.12 KW	ECO DEMAND	0.01 KW
NET ENERGY SAVINGS	946 KWH/YR	NET DOLLAR SAVINGS	\$35

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Estimate:      Bldg. 3217      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					125.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		45.50	\$0	\$1,250	\$0	\$0	\$1,250
0207082121	DEMO. 2X4' FLUOR FIXTURES					85.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		41.23	\$0	\$1,135	\$0	\$0	\$1,135
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					18.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		5.76	\$0	\$158	\$0	\$0	\$158
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					6.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		1.55	\$0	\$43	\$0	\$0	\$43
U02 SITEWORK		95	\$0	\$2,586	\$0	\$0	\$2,586

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					4.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	4.00	\$740	\$110	\$0	\$0	\$850
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					6.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	8.42	\$528	\$231	\$0	\$0	\$759
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					4.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	6.40	\$360	\$176	\$0	\$0	\$536
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					81.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	137.70	\$7,614	\$3,807	\$0	\$0	\$11,421
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					113.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	128.82	\$8,249	\$3,560	\$0	\$0	\$11,809
1661309909	SUR FLUOR 1X4' W 2 32W T8					6.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	6.84	\$516	\$189	\$0	\$0	\$705
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					18.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	25.20	\$1,602	\$693	\$0	\$0	\$2,295
1661388040	COMP FLUOR LAMP, 26 W QUAD					0.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					2.00 EA
Unit values	1.00	25.50	27.50	0.00	0.00	53.00
Totals	2.00	\$51	\$55	\$0	\$0	\$106

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=====
Line #      Description
-----
           Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      320    $19,660    $8,821         $0         $0    $28,481

ESTIMATE TOTAL      415    $19,660    $11,407         $0         $0    $31,067

SALES TAX           5.00%         $983
MATL MARKUP        -40.00%    ($7,864)
LABOR MARKUP       -13.40%    ($1,529)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $12,779    $9,878         $0         $0    $22,657
CONTINGENCY          10.00%                $2,266
BOND                  2.50%                $566
PROFIT                10.00%                $2,266

JOB TOTAL                                $27,755
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Estimate:      Bldg. 3217      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	95	\$0	\$2,586	\$0	\$0	\$2,586
U16 ELECTRICAL	320	\$19,660	\$8,821	\$0	\$0	\$28,481
TOTAL	415	\$19,660	\$11,407	\$0	\$0	\$31,067
SALES TAX	5.00%	\$983				
MATL MARKUP	-40.00%	(\$7,864)				
LABOR MARKUP	-13.40%		(\$1,529)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$12,779	\$9,878	\$0	\$0	\$22,657
CONTINGENCY	10.00%					\$2,266
BOND	2.50%					\$566
PROFIT	10.00%					\$2,266
JOB TOTAL						\$27,755

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3218
AREA: BARRACKS
AREA USE: 8
HOURS/DAY 7
DAYS/WEEK
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	4 FOOT	8 FOOT
2 LAMP U @ 97 W/FIXT = 0 WATTS	1 LAMP @ 56 W/FIXT = 0 WATTS	2 LAMP @ 180 W/FIXT = 0 WATTS
	6 2 LAMP @ 97 W/FIXT = 582 WATTS	
	3 LAMP @ 153 W/FIXT = 0 WATTS	
	12 4 LAMP @ 194 W/FIXT = 2,328 WATTS	
2 FOOT	4 FOOT	8 FOOT
0 2 LAMP U @ 56 W/FIXT = 0.00 WATTS	0 1 LAMP @ 29 W/FIXT = 0.00 WATTS	0 2 LAMP @ 125 W/FIXT = 0.00 WATTS
	6 2 LAMP @ 58 W/FIXT = 348.00 WATTS	
	0 3 LAMP @ 87 W/FIXT = 0.00 WATTS	
	12 4 LAMP @ 118 W/FIXT = 1,416.00 WATTS	

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	ECO ENERGY CONSUMPTION	ECO ENERGY CONSUMPTION
8,474 KWH/YR	5,137 KWH/YR	5,137 KWH/YR
30,506 MJ/YR	18,492 MJ/YR	18,492 MJ/YR
2.91 KW	1.76 KW	1.76 KW

NET ENERGY SAVINGS	NET DEMAND SAVINGS
12,014 MJ/YR	\$162 /YR
11 MBTU/YR	\$233 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 3218
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	87 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	28 W/FIXT = 0 WATTS
206 2 LAMP @	97 W/FIXT = 19,982 WATTS	206 2 LAMP @	58 W/FIXT = 11,948 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS
78 4 LAMP @	194 W/FIXT = 15,132 WATTS	78 4 LAMP @	118 W/FIXT = 9,204 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
153,378 KWH/YR		92,392 KWH/YR	
552,161 MJ/YR		332,611 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
35.11 KW		21.15 KW	

NET ENERGY SAVINGS	219,550 MJ/YR	NET DEMAND SAVINGS	\$1,974 /YR
NET ENERGY SAVINGS	208 MBTU/YR	NET DOLLAR SAVINGS	\$3,263 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	3218		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
54 2 LAMP @	97 W/FIXT = 5,238 WATTS	54 2 LAMP @	58 W/FIXT = 3,132.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
	45,759 KWH/YR		27,361 KWH/YR
	164,733 MJ/YR		98,500 MJ/YR
BASELINE DEMAND		ECO DEMAND	
	5.24 KW		3.13 KW

NET ENERGY SAVINGS	66,233 MJ/YR	NET DEMAND SAVINGS	\$298 /YR
NET ENERGY SAVINGS	63 MBTU/YR	NET DOLLAR SAVINGS	\$687 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 3218-BARRACKS
 AREA: STAIRWELLS & HALLWAYS
 LAMP USE: 24
 HOURS/DAY 7
 DAYS/WEEK 1 (1-YES, 2-NO)
 PEAK USE
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARG \$11.78 PER KW

EXISTING INCANDESCENTS				COMPACT FLUORESCENT REPLACEMENT			
LAMPS @	52	WATTS =	0 WATTS	11 LAMPS	13	WATTS =	143 WATTS
11 LAMPS @	60	WATTS =	660 WATTS				
12 LAMPS @	75	WATTS =	900 WATTS	12 LAMPS	18	WATTS =	216 WATTS
LAMPS @	90	WATTS =	0 WATTS	0 LAMPS	26	WATTS =	0 WATTS
LAMPS @	135	WATTS =	0 WATTS				

BASELINE ENERGY CONSUMPTION	13,628 KWH	ECO ENERGY CONSUMPTION	359 KWH
	49,061 MJ		1,292 MJ
BASELINE DEMAND	1.56 KW	ECO DEMAND	0.36 KW

NET ENERGY SAVINGS	47,769 MJ/YR	NET DEMAND SAVINGS	\$170 /YR
NET ENERGY SAVINGS	45 MBTU/YR	NET DOLLAR SAVINGS	\$450 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 3218

EXIT SIGNS 4 ELECTRIC COSTS:
 CURRENT WATTAGE 30 ENERGY CHARGE \$0.0211 PER KWH
 REPLACEMENT WATTAG 3 DEMAND CHARGE \$11.78 PER KW

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	1051 KWH/YR	ECO ENERGY CONSUMPTION	105.1 KWH/YR
BASELINE DEMAND	0.12 KW	ECO DEMAND	0.01 KW

NET ENERGY SAVINGS	946 KWH/YR	NET DOLLAR SAVINGS	\$35
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Estimate:      Bldg. 3218      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					86.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		31.30	\$0	\$860	\$0	\$0	\$860
0207082121	DEMO. 2X4' FLUOR FIXTURES					264.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		128.04	\$0	\$3,524	\$0	\$0	\$3,524
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					6.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		1.92	\$0	\$53	\$0	\$0	\$53
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					27.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		6.97	\$0	\$192	\$0	\$0	\$192
U02 SITEWORK		169	\$0	\$4,629	\$0	\$0	\$4,629

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					
Unit values	1.00	185.00	27.50	0.00	4.00 EA 0.00	212.50
Totals	4.00	\$740	\$110	\$0	\$0	\$850
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					
Unit values	1.40	88.00	38.50	0.00	54.00 EA 0.00	126.50
Totals	75.82	\$4,752	\$2,079	\$0	\$0	\$6,831
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.51	84.00	41.50	0.00	174.00 EA 0.00	125.50
Totals	262.74	\$14,616	\$7,221	\$0	\$0	\$21,837
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					
Unit values	1.60	90.00	44.00	0.00	0.00 EA 0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					
Unit values	1.70	94.00	47.00	0.00	90.00 EA 0.00	141.00
Totals	153.00	\$8,460	\$4,230	\$0	\$0	\$12,690
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.14	73.00	31.50	0.00	32.00 EA 0.00	104.50
Totals	36.48	\$2,336	\$1,008	\$0	\$0	\$3,344
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	0.00 EA 0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	0.00 EA 0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					
Unit values	1.40	89.00	38.50	0.00	6.00 EA 0.00	127.50
Totals	8.40	\$534	\$231	\$0	\$0	\$765
1661388040	COMP FLUOR LAMP, 26 W QUAD					
Unit values	0.50	10.50	13.75	0.00	12.00 EA 0.00	24.25

26-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	11.00 EA	53.00
Totals	11.00	\$281	\$303	\$0	\$0	\$584

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Line #      Description
-----
      Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      558    $31,845    $15,347          $0      $0    $47,192

ESTIMATE TOTAL      727    $31,845    $19,976          $0      $0    $51,821

SALES TAX           5.00%    $1,592
MATL MARKUP        -40.00%   ($12,738)
LABOR MARKUP       -13.40%          ($2,677)
EQUIPT MARKUP       0.00%          $0
SUB MARKUP          0.00%          $0

TOTAL BEFORE CONTINGENC $20,699    $17,299          $0      $0    $37,998
CONTINGENCY         10.00%          $3,800
BOND                 2.50%          $950
PROFIT              10.00%          $3,800

JOB TOTAL                                $46,548
=====
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=====
Estimate:      Bldg. 3218      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      169      $0      $4,629      $0      $0      $4,629
U16 ELECTRICAL    558    $31,845    $15,347      $0      $0    $47,192
TOTAL              727    $31,845    $19,976      $0      $0    $51,821

SALES TAX          5.00%      $1,592
MATL MARKUP       -40.00%   ($12,738)
LABOR MARKUP      -13.40%      ($2,677)
EQUIPT MARKUP      0.00%      $0
SUB MARKUP         0.00%      $0

TOTAL BEFORE CONTINGENC $20,699    $17,299      $0      $0    $37,998
CONTINGENCY        10.00%      $3,800
BOND                2.50%      $950
PROFIT             10.00%      $3,800

JOB TOTAL                                $46,548

```


FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6709	
AREA:	BARRACKS	
AREA USE:		
HOURS/DAY	8	\$0.0211 PER KWH
DAYS/WEEK	7	\$11.78 PER KW
BUILDING VOLTAGE:	277	

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

REPLACEMENT FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS	0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	66 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0.00 WATTS
	3 2 LAMP @	97 W/FIXT =	291 WATTS	3 2 LAMP @	58 W/FIXT =	174.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0.00 WATTS
	4 LAMP @	194 W/FIXT =	0 WATTS	0 4 LAMP @	118 W/FIXT =	0.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0.00 WATTS

BASELINE ENERGY CONSUMPTION	847 KWH/YR	ECO ENERGY CONSUMPTION	507 KWH/YR
	3,051 MJ/YR		1,824 MJ/YR
BASELINE DEMAND	0.29 KW	ECO DEMAND	0.17 KW

NET ENERGY SAVINGS	1,227 MJ/YR	NET DEMAND SAVINGS	\$17 /YR
NET ENERGY SAVINGS	1 MBTU/YR	NET DOLLAR SAVINGS	\$24 /YR

19 AUGUST 1994

BUILDING #: 6709
AREA: BARRACKS

<u>ELECTRIC COSTS:</u>	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	\$11.78 PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

2 FOOT

46 2 LAMP U 97 W/FXT # 4,462 WATTS

2 FOOT

46.2 LAMP U @ 58 W/FIXT = 2668 WATTS

REPLACEMENT FIXTURE DATA

4 FOOT

1 LAMP @	56 W/FXT =	0 WATTS
41 2 LAMP @	97 W/FXT =	3,977 WATTS
50 3 LAMP @	153 W/FXT =	7,650 WATTS
32 4 LAMP @	194 W/FXT =	6,208 WATTS

4 FOOT

0	1 LAMP @	29 W/FIXT =	0 WATTS
41	2 LAMP @	58 W/FIXT =	2,378 WATTS
50	3 LAMP @	87 W/FIXT =	4,350 WATTS
32	4 LAMP @	118 W/FIXT =	3,776 WATTS

8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS

8 FOOT

0 2 LAMP @ 125 W/FIXT # 0 WATTS

BASELINE ENERGY CONSUMPTION

97,393	KWH/YR
350,616	MJ/YR

ECO ENERGY CONSUMPTION

57,535	KWH/YR
207,127	MJ/YR

BASELINE DEMAND

22.30 KW

ECO DEMAND

13.17 KW

NET ENERGY SAVINGS

143,489 MJ/YR

NET DEMAND SAVINGS

\$1,290 /YR

NET ENERGY SAVINGS

136 MBTU/YR

NET DOLLAR SAVINGS

\$2,133 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6709
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 42 2 LAMP U 97 W/FIXT = 4 074 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 42 2 LAMP U @ 58 W/FIXT = 2 436.00 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 0 2 LAMP @ 58 W/FIXT = 0.00 WATTS
 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 35,590 KWH/YR ECO ENERGY CONSUMPTION 21,281 KWH/YR
 128,126 MJ/YR 76,611 MJ/YR
 BASELINE DEMAND 4.07 KW ECO DEMAND 2.44 KW

NET ENERGY SAVINGS 51,514 MJ/YR NET DEMAND SAVINGS \$232 /YR
 NET ENERGY SAVINGS 49 MBTU/YR NET DOLLAR SAVINGS \$534 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6709-BARRACKS
 AREA: STAIRWELLS
 LAMP USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE:

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS	
LAMPS @	60	WATTS =	0	WATTS	
14 LAMPS @	75	WATTS =	1050	WATTS	
LAMPS @	90	WATTS =	0	WATTS	
LAMPS @	135	WATTS =	0	WATTS	

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
14 LAMPS @	18	WATTS =	252	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

9,173 KWH
 33,022 MJ

ECO ENERGY CONSUMPTION

252 KWH
 907 MJ

BASELINE DEMAND

1.05 KW

ECO DEMAND

0.25 KW

NET ENERGY SAVINGS

32,115 MJ/YR

NET DEMAND SAVINGS

\$113 /YR

NET ENERGY SAVINGS

30 MBTU/YR

NET DOLLAR SAVINGS

\$301 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BARRACKS - 6709

BUILDING #:			
# EXIT SIGNS	11		
CURRENT WATTAGE	30		
REPLACEMENT WATTAG	3		
HOURS/YEAR	8760		

ELECTRIC COSTS:	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	\$11.78 PER KW

BASELINE ENERGY CONSUMPTION	2891 KWH/YR	ECO ENERGY CONSUMPTION	289.1 KWH/YR
BASELINE DEMAND	0.33 KW	ECO DEMAND	0.03 KW
NET ENERGY SAVINGS	2602 KWH/YR	NET DOLLAR SAVINGS	\$97

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=====
Estimate:      Bldg. 6709      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					129.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	46.96	\$0	\$1,290	\$0	\$0	\$1,290	
0207082121	DEMO. 2X4' FLUOR FIXTURES					82.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	39.77	\$0	\$1,095	\$0	\$0	\$1,095	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					3.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	0.96	\$0	\$26	\$0	\$0	\$26	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					25.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	6.45	\$0	\$178	\$0	\$0	\$178	
U02 SITEWORK	95	\$0	\$2,589	\$0	\$0	\$2,589	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					11.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	11.00	\$2,035	\$303	\$0	\$0		\$2,338
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					88.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	123.55	\$7,744	\$3,388	\$0	\$0		\$11,132
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					50.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	80.00	\$4,500	\$2,200	\$0	\$0		\$6,700
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					32.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	54.40	\$3,008	\$1,504	\$0	\$0		\$4,512
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					5.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	5.70	\$365	\$158	\$0	\$0		\$523
1661309909	SUR FLUOR 1X4' W 2 32W T8					36.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	41.04	\$3,096	\$1,134	\$0	\$0		\$4,230
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	4.20	\$267	\$116	\$0	\$0		\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					14.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

26-Jul-94

MeansData for Lotus

Page 3

Totals	7.00	\$147	\$193	\$0	\$0	\$340
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0


```
=====
Line #      Description
-----
            Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      327    $21,162    $8,996         $0        $0    $30,158

ESTIMATE TOTAL      422    $21,162    $11,585         $0        $0    $32,747

SALES TAX           5.00%    $1,058
MATL MARKUP        -40.00%   ($8,465)
LABOR MARKUP       -13.40%         ($1,552)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $13,755    $10,033         $0        $0    $23,788
CONTINGENCY          10.00%         $2,379
BOND                  2.50%         $595
PROFIT                10.00%         $2,379

JOB TOTAL                                     $29,140
=====
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=====
Estimate:      Bldg. 6709          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:     Ft. Campbell        Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      95      $0    $2,589      $0      $0    $2,589
U16 ELECTRICAL   327    $21,162    $8,996      $0      $0    $30,158
TOTAL            422    $21,162    $11,585      $0      $0    $32,747

SALES TAX         5.00%    $1,058
MATL MARKUP      -40.00%   ($8,465)
LABOR MARKUP     -13.40%   ($1,552)
EQUIPT MARKUP    0.00%
SUB MARKUP       0.00%

TOTAL BEFORE CONTINGENC $13,755  $10,033      $0      $0    $23,788
CONTINGENCY       10.00%      $2,379
BOND              2.50%      $595
PROFIT           10.00%      $2,379
JOB TOTAL                                $29,140

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6710
AREA: BARRACKS
AREA USE: _____
HOURS/DAY: 8
DAYS/WEEK: 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 LAMP U	97 W/FIXT =	0 WATTS	0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT		1 LAMP @	56 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0.00 WATTS
		32 2 LAMP @	97 W/FIXT =	3,104 WATTS	32 2 LAMP @	58 W/FIXT =	1,856.00 WATTS
		3 LAMP @	153 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0.00 WATTS
		4 LAMP @	194 W/FIXT =	0 WATTS	0 4 LAMP @	118 W/FIXT =	0.00 WATTS
8 FOOT		2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0.00 WATTS

BASELINE ENERGY CONSUMPTION	9,039 KWH/YR	ECO ENERGY CONSUMPTION	5,405 KWH/YR
	32,540 MJ/YR		19,457 MJ/YR
BASELINE DEMAND	3.10 KW	ECO DEMAND	1.86 KW

NET ENERGY SAVINGS	13,083 MJ/YR	NET DEMAND SAVINGS	\$176 /YR
NET ENERGY SAVINGS	12 MBTU/YR	NET DOLLAR SAVINGS	\$253 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6710		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	87 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS
	60 2 LAMP @	97 W/FIXT =	5,820 WATTS
	50 3 LAMP @	153 W/FIXT =	7,650 WATTS
	48 4 LAMP @	194 W/FIXT =	9,312 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0.00 WATTS
	60 2 LAMP @	58 W/FIXT =	3,480.00 WATTS
	50 3 LAMP @	87 W/FIXT =	4,350.00 WATTS
	48 4 LAMP @	118 W/FIXT =	5,664.00 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0.00 WATTS

BASELINE ENERGY CONSUMPTION	99,512 KWH/YR	ECO ENERGY CONSUMPTION	58,942 KWH/YR
	358,242 MJ/YR		212,190 MJ/YR
BASELINE DEMAND	22.78 KW	ECO DEMAND	13.49 KW

NET ENERGY SAVINGS	146,052 MJ/YR	NET DEMAND SAVINGS	\$1,313 /YR
NET ENERGY SAVINGS	138 MBTU/YR	NET DOLLAR SAVINGS	\$2,171 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6710
AREA: BARRACKS
AREA USE: 24
HOURS/DAY
DAYS/WEEK 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
50 2 LAMP U 97 W/FIXT = 4,850 WATTS
2 FOOT 50 2 LAMP U @ 58 W/FIXT = 2,900.00 WATTS

4 FOOT
1 LAMP @ 56 W/FIXT = 0 WATTS
7 2 LAMP @ 97 W/FIXT = 679 WATTS
3 LAMP @ 153 W/FIXT = 0 WATTS
4 LAMP @ 194 W/FIXT = 0 WATTS
4 FOOT 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
7 2 LAMP @ 58 W/FIXT = 406.00 WATTS
0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
2 LAMP @ 180 W/FIXT = 0 WATTS
8 FOOT 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 48,301 KWH/YR
173,885 MJ/YR
ECO ENERGY CONSUMPTION 28,881 KWH/YR
103,972 MJ/YR

BASELINE DEMAND 5.53 KW
ECO DEMAND 3.31 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

69,912 MJ/YR
66 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$314 /YR
\$725 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6710-BARRACKS
 AREA: RESTROOMS & CAGE ROOMS
 LAMP USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: _____

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
 17 LAMPS @ 60 WATTS = 1020 WATTS
 LAMPS @ 75 WATTS = 0 WATTS
 LAMPS @ 90 WATTS = 0 WATTS
 34 LAMPS @ 100 WATTS = 3400 WATTS

COMPACT FLUORESCENT REPLACEMENT

17 LAMPS @ 13 WATTS = 221 WATTS
 0 LAMPS @ 18 WATTS = 0 WATTS
 34 LAMPS @ 26 WATTS = 884 WATTS

BASELINE ENERGY CONSUMPTION

12,871 KWH
 46,336 MJ

ECO ENERGY CONSUMPTION

1,105 KWH
 3,978 MJ
 1.11 KW

BASELINE DEMAND

4.42 KW

ECO DEMAND

NET ENERGY SAVINGS

42,358 MJ/YR

NET DEMAND SAVINGS

\$469 /YR

NET ENERGY SAVINGS

40 MBTU/YR

NET DOLLAR SAVINGS

\$717 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6710-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS	13	WATTS =	0	WATTS
12 LAMPS	18	WATTS =	216	WATTS
0 LAMPS	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6710

EXIT SIGNS 6 ELECTRIC COSTS:
 CURRENT WATTAGE 30 ENERGY CHARGE \$0.0211 PER KWH
 REPLACEMENT WATTAG 3 DEMAND CHARGE \$11.78 PER KW

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	1577 KWH/YR	ECO ENERGY CONSUMPTION	157.7 KWH/YR
BASELINE DEMAND	0.18 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1419 KWH/YR	NET DOLLAR SAVINGS	\$53
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Estimate:      Bldg. 6710      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					117.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	42.59	\$0	\$1,170	\$0	\$0	\$1,170	
0207082121	DEMO. 2X4' FLUOR FIXTURES					98.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	47.53	\$0	\$1,308	\$0	\$0	\$1,308	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					32.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	10.24	\$0	\$282	\$0	\$0	\$282	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					69.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	17.80	\$0	\$490	\$0	\$0	\$490	
U02 SITEWORK	119	\$0	\$3,250	\$0	\$0	\$3,250	

=====						
Line #	Description					
		Manhours	Matl	Labor	Equipment	Sub Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					6.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	6.00	\$1,110	\$165	\$0	\$0	\$1,275
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					50.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	70.20	\$4,400	\$1,925	\$0	\$0	\$6,325
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					50.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	80.00	\$4,500	\$2,200	\$0	\$0	\$6,700
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					48.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	81.60	\$4,512	\$2,256	\$0	\$0	\$6,768
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					67.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	76.38	\$4,891	\$2,111	\$0	\$0	\$7,002
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					32.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	44.80	\$2,848	\$1,232	\$0	\$0	\$4,080
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	51.00 EA	
Totals	51.00	\$1,301	\$1,403	\$0	0.00	53.00
					\$0	\$2,704

```
=====
Line #      Description
-----
              Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      416    $23,688    $11,457           $0        $0    $35,145

ESTIMATE TOTAL      535    $23,688    $14,707           $0        $0    $38,395

SALES TAX           5.00%      $1,184
MATL MARKUP        -40.00%    ($9,475)
LABOR MARKUP       -13.40%           ($1,971)
EQUIPT MARKUP       0.00%           $0
SUB MARKUP          0.00%           $0

TOTAL BEFORE CONTINGENC $15,397    $12,736           $0        $0    $28,133
CONTINGENCY         10.00%           $2,813
BOND                 2.50%           $703
PROFIT              10.00%           $2,813

JOB TOTAL                                $34,463
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Estimate:      Bldg. 6710      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
=====

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SUMMARY

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Manhours  Matl    Labor  Equipment  Sub    Total
=====
U02 SITEWORK      119      $0      $3,250      $0      $0      $3,250
U16 ELECTRICAL    416     $23,688    $11,457      $0      $0     $35,145
TOTAL              535     $23,688    $14,707      $0      $0     $38,395

SALES TAX          5.00%      $1,184
MATL MARKUP        -40.00%    ($9,475)
LABOR MARKUP        -13.40%    ($1,971)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $15,397    $12,736      $0      $0     $28,133
CONTINGENCY         10.00%           $2,813
BOND                 2.50%           $703
PROFIT              10.00%           $2,813

JOB TOTAL                                     $34,463

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6711
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
	12.2 LAMP @	97 W/FIXT =	1,164 WATTS	12.2 LAMP @	58 W/FIXT =	696.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0.00 WATTS
	4 LAMP @	194 W/FIXT =	0 WATTS	0.4 LAMP @	118 W/FIXT =	0.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	3,390 KWH/YR	ECO ENERGY CONSUMPTION	2,027 KWH/YR
	12,202 MJ/YR		7,296 MJ/YR
BASELINE DEMAND	1.16 KW	ECO DEMAND	0.70 KW

NET ENERGY SAVINGS	4,906 MJ/YR	NET DEMAND SAVINGS	\$66 /YR
NET ENERGY SAVINGS	5 MBTU/YR	NET DOLLAR SAVINGS	\$95 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6711
AREA: BARRACKS
AREA USE: 12
HOURS/DAY: 7
DAYS/WEEK: 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0.00 WATTS		
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS		
43 2 LAMP @	97 W/FIXT = 4,171 WATTS	43 2 LAMP @	58 W/FIXT = 2,494.00 WATTS		
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS		
38 4 LAMP @	194 W/FIXT = 7,372 WATTS	38 4 LAMP @	118 W/FIXT = 4,484.00 WATTS		
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS		

BASELINE ENERGY CONSUMPTION	50,420 KWH/YR	ECO ENERGY CONSUMPTION	30,480 KWH/YR
	181,511 MJ/YR		109,728 MJ/YR
BASELINE DEMAND	11.54 KW	ECO DEMAND	6.98 KW

NET ENERGY SAVINGS	71,784 MJ/YR	NET DEMAND SAVINGS	\$645 YR
NET ENERGY SAVINGS	68 MBTU/YR	NET DOLLAR SAVINGS	\$1,067 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6711
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
32 2 LAMP U	97 W/FIXT = 3,104 WATTS	32 2 LAMP U @	58 W/FIXT = 1,856.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
2 LAMP @	97 W/FIXT = 0 WATTS	0 2 LAMP @	58 W/FIXT = 0.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
27,117 KWH/YR		16,214 KWH/YR	
97,620 MJ/YR		58,370 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
3.10 KW		1.86 KW	

NET ENERGY SAVINGS	39,249 MJ/YR	NET DEMAND SAVINGS	\$176 /YR
NET ENERGY SAVINGS	37 MBTU/YR	NET DOLLAR SAVINGS	\$407 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6711-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
LAMPS @ 60 WATTS = 0 WATTS
12 LAMPS @ 75 WATTS = 900 WATTS
LAMPS @ 90 WATTS = 0 WATTS
LAMPS @ 100 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13 WATTS = 0 WATTS
12 LAMPS @ 18 WATTS = 216 WATTS
0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS
NET ENERGY SAVINGS

27,527 MJ/YR
26 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$97 /YR
\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6711

EXIT SIGNS 2 ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH

CURRENT WATTAGE 30 DEMAND CHARGE \$11.78 PER KW

REPLACEMENT WATTAG 3

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	525.6 KWH/YR	ECO ENERGY CONSUMPTION	52.56 KWH/YR
BASELINE DEMAND	0.06 KW	ECO DEMAND	0.01 KW

NET ENERGY SAVINGS	473 KWH/YR	NET DOLLAR SAVINGS	\$18
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Estimate:      Bldg. 6711      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					49.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		17.84	\$0	\$490	\$0	\$0	\$490
0207082121	DEMO. 2X4' FLUOR FIXTURES					64.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		31.04	\$0	\$854	\$0	\$0	\$854
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					12.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		3.84	\$0	\$106	\$0	\$0	\$106
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					14.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.61	\$0	\$99	\$0	\$0	\$99
U02 SITEWORK		57	\$0	\$1,549	\$0	\$0	\$1,549

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					2.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	2.00	\$370	\$55	\$0	\$0		\$425
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					32.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	44.93	\$2,816	\$1,232	\$0	\$0		\$4,048
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					26.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	39.26	\$2,184	\$1,079	\$0	\$0		\$3,263
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					38.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	64.60	\$3,572	\$1,786	\$0	\$0		\$5,358
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					17.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	19.38	\$1,241	\$536	\$0	\$0		\$1,777
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					12.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	16.80	\$1,068	\$462	\$0	\$0		\$1,530
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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=====
Line #      Description
-----
           Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      193    $11,377    $5,315           $0        $0    $16,692

ESTIMATE TOTAL      250    $11,377    $6,864           $0        $0    $18,241

SALES TAX           5.00%           $569
MATL MARKUP        -40.00%    ($4,551)
LABOR MARKUP       -13.40%           ($920)
EQUIPT MARKUP       0.00%           $0
SUB MARKUP          0.00%           $0

TOTAL BEFORE CONTINGENC    $7,395    $5,944           $0        $0    $13,339
CONTINGENCY           10.00%           $1,334
BOND                   2.50%           $333
PROFIT                 10.00%           $1,334

JOB TOTAL                                $16,341
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Estimate:      Bldg. 6711      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
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SUMMARY

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              Manhours   Matl      Labor   Equipment   Sub      Total
=====
U02 SITEWORK          57          $0      $1,549          $0          $0      $1,549
U16 ELECTRICAL       193     $11,377      $5,315          $0          $0     $16,692
TOTAL                 250     $11,377      $6,864          $0          $0     $18,241

SALES TAX              5.00%          $569
MATL MARKUP            -40.00%     ($4,551)
LABOR MARKUP           -13.40%          ($920)
EQUIPT MARKUP          0.00%          $0
SUB MARKUP             0.00%          $0

TOTAL BEFORE CONTINGENC   $7,395      $5,944          $0          $0     $13,339
CONTINGENCY              10.00%          $1,334
BOND                     2.50%          $333
PROFIT                   10.00%          $1,334

JOB TOTAL                                     $16,341

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6712
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	87 W/FIXT =	0 WATTS	2 FOOT	0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	4 FOOT	0 1 LAMP @	29 W/FIXT =	0.00 WATTS
	3 2 LAMP @	97 W/FIXT =	291 WATTS		3 2 LAMP @	58 W/FIXT =	174.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS		0 3 LAMP @	87 W/FIXT =	0.00 WATTS
	8 4 LAMP @	194 W/FIXT =	1,552 WATTS		8 4 LAMP @	118 W/FIXT =	944.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	8 FOOT	0 2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	5,367 KWH/YR	ECO ENERGY CONSUMPTION	3,256 KWH/YR
	19,321 MJ/YR		11,720 MJ/YR
BASELINE DEMAND	1.84 KW	ECO DEMAND	1.12 KW

NET ENERGY SAVINGS	7,600 MJ/YR	NET DEMAND SAVINGS	\$102 /YR
NET ENERGY SAVINGS	7 MBTU/YR	NET DOLLAR SAVINGS	\$147 /YR

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6712
AREA: BARRACKS

ELECTRIC COSTS:	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	\$11.78 PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT

3 2 LAMP U 97 W/FIXT = 294 WATTS

2 FOOT

3 2 LAMP U @ 3 2 LAMP U @ 58 W/FIXT = 174 WATTS

4 FOOT				4 FOOT			
1 LAMP @	56 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS		
8 2 LAMP @	97 W/FIXT =	776 WATTS	8 2 LAMP @	58 W/FIXT =	464 WATTS		
3 LAMP @	153 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0 WATTS		
76 4 LAMP @	194 W/FIXT =	14,744 WATTS	76 4 LAMP @	118 W/FIXT =	8,968 WATTS		

8 FOOT 8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS 0.2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION	69,062 KWH/YR	ECO ENERGY CONSUMPTION	41,959 KWH/YR
	248,625 MJ/YR		151,052 MJ/YR
BASELINE DEMAND	15.81 KW	ECO DEMAND	9.61 KW

NET ENERGY SAVINGS	97,572 MJ/YR	NET DEMAND SAVINGS	\$877 /YR
NET ENERGY SAVINGS	92 MBTU/YR	NET DOLLAR SAVINGS	\$1,450 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6712
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 40 2 LAMP U 97 W/FIXT = 3,880 WATTS 40 2 LAMP U @ 58 W/FIXT = 2,320.00 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0.00 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 33,896 KWH/YR ECO ENERGY CONSUMPTION 20,268 KWH/YR
 122,024 MJ/YR 72,963 MJ/YR
 BASELINE DEMAND 3.88 KW ECO DEMAND 2.32 KW

NET ENERGY SAVINGS 49,061 MJ/YR NET DEMAND SAVINGS \$221 /YR
 NET ENERGY SAVINGS 46 MBTU/YR NET DOLLAR SAVINGS \$509 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6712-BARRACKS

AREA: SUPPLY

LAMP USE: 8

HOURS/DAY: 7

DAYS/WEEK: 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
LAMPS @	75	WATTS =	0	WATTS
LAMPS @	90	WATTS =	0	WATTS
8 LAMPS @	135	WATTS =	1080	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
0 LAMPS @	18	WATTS =	0	WATTS
8 LAMPS @	26	WATTS =	208	WATTS

BASELINE ENERGY CONSUMPTION

3,145 KWH
11,322 MJ

ECO ENERGY CONSUMPTION

208 KWH
749 MJ

BASELINE DEMAND

1.08 KW

ECO DEMAND

0.21 KW

NET ENERGY SAVINGS

10,573 MJ/YR

NET DEMAND SAVINGS

\$123 /YR

NET ENERGY SAVINGS

10 MBTU/YR

NET DOLLAR SAVINGS

\$185 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6712-BARRACKS
AREA: STAIRWELLS & BASEMNT

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
8 LAMPS @	60	WATTS =	480	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	100	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

8 LAMPS @	13	WATTS =	104	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

12,056 KWH
43,400 MJ

ECO ENERGY CONSUMPTION

320 KWH
1,152 MJ
0.32 KW

BASELINE DEMAND

1.38 KW

ECO DEMAND

NET ENERGY SAVINGS
NET ENERGY SAVINGS

42,248 MJ/YR
40 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$150 /YR
\$398 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6712

EXIT SIGNS 5 ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH

CURRENT WATTAGE 30 DEMAND CHARGE \$11.78 PER KW

REPLACEMENT WATTAG 3

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	1314 KWH/YR	ECO ENERGY CONSUMPTION	131.4 KWH/YR
BASELINE DEMAND	0.15 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1183 KWH/YR	NET DOLLAR SAVINGS	\$44
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=====
Estimate:      Bldg. 6712      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					54.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	19.66	\$0	\$540	\$0	\$0	\$540	
0207082121	DEMO. 2X4' FLUOR FIXTURES					84.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	40.74	\$0	\$1,121	\$0	\$0	\$1,121	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					11.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	3.52	\$0	\$97	\$0	\$0	\$97	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					33.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	8.51	\$0	\$234	\$0	\$0	\$234	
U02 SITEWORK	73	\$0	\$1,992	\$0	\$0	\$1,992	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					5.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	5.00	\$925	\$138	\$0	\$0		\$1,063
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					43.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	60.37	\$3,784	\$1,656	\$0	\$0		\$5,440
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					84.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	142.80	\$7,896	\$3,948	\$0	\$0		\$11,844
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					11.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	15.40	\$979	\$424	\$0	\$0		\$1,403
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	16.00 EA 0.00	53.00
Totals	16.00	\$408	\$440	\$0	\$0	\$848


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=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      246    $14,118    $6,771         $0        $0    $20,889

ESTIMATE TOTAL      319    $14,118    $8,763         $0        $0    $22,881

SALES TAX           5.00%         $706
MATL MARKUP        -40.00%    ($5,647)
LABOR MARKUP       -13.40%         ($1,174)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $9,177    $7,589         $0        $0    $16,765
CONTINGENCY           10.00%         $1,677
BOND                   2.50%         $419
PROFIT                 10.00%         $1,677

JOB TOTAL                                     $20,538
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=====
Estimate:      Bldg. 6712      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:                      City indx:
=====

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SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	73	\$0	\$1,992	\$0	\$0	\$1,992
U16 ELECTRICAL	246	\$14,118	\$6,771	\$0	\$0	\$20,889
TOTAL	319	\$14,118	\$8,763	\$0	\$0	\$22,881
SALES TAX	5.00%	\$706				
MATL MARKUP	-40.00%	(\$5,647)				
LABOR MARKUP	-13.40%		(\$1,174)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$9,177	\$7,589	\$0	\$0	\$16,765
CONTINGENCY	10.00%					\$1,677
BOND	2.50%					\$419
PROFIT	10.00%					\$1,677
JOB TOTAL						\$20,538

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6718
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS
 3 2 LAMP @ 97 W/FIXT = 291 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 3 2 LAMP @ 58 W/FIXT = 174.00 WATTS
 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 847 KWH/YR
 3,051 MJ/YR
 BASELINE DEMAND 0.29 KW

ECO ENERGY CONSUMPTION 507 KWH/YR
 1,824 MJ/YR
 ECO DEMAND 0.17 KW

NET ENERGY SAVINGS 1,227 MJ/YR
 NET ENERGY SAVINGS 1 MBTU/YR
 NET DEMAND SAVINGS \$17 /YR
 NET DOLLAR SAVINGS \$24 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6718
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	97 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
75 2 LAMP @	97 W/FIXT = 7,275 WATTS	75 2 LAMP @	58 W/FIXT = 4,350.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION	31,777 KWH/YR	ECO ENERGY CONSUMPTION	19,001 KWH/YR
	114,398 MJ/YR		68,403 MJ/YR
BASELINE DEMAND	7.28 KW	ECO DEMAND	4.35 KW

NET ENERGY SAVINGS	45,995 MJ/YR	NET DEMAND SAVINGS	\$413 /YR
NET ENERGY SAVINGS	44 MBTU/YR	NET DOLLAR SAVINGS	\$684 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6718
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 35 2 LAMP U 87 W/FIXT = 3,395 WATTS 35 2 LAMP U @ 58 W/FIXT = 2,030.00 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0.00 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 29,659 KWH/YR ECO ENERGY CONSUMPTION 17,734 KWH/YR
 106,771 MJ/YR 63,843 MJ/YR
 BASELINE DEMAND 3.40 KW ECO DEMAND 2.03 KW

NET ENERGY SAVINGS 42,929 MJ/YR NET DEMAND SAVINGS \$193 /YR
 NET ENERGY SAVINGS 41 MBTU/YR NET DOLLAR SAVINGS \$445 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6718-BARRACKS

AREA: OFFICES

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

12

7

1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
5 LAMPS @	75	WATTS =	375	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	0	WATTS =	13	WATTS
5 LAMPS @	18	WATTS =	90	WATTS
LAMPS @	0	WATTS =	26	WATTS

BASELINE ENERGY CONSUMPTION

1,638 KWH

5,897 MJ

ECO ENERGY CONSUMPTION

90 KWH

324 MJ

BASELINE DEMAND

0.38 KW

ECO DEMAND

0.09 KW

NET ENERGY SAVINGS

5,573 MJ/YR

NET DEMAND SAVINGS

\$40 /YR

NET ENERGY SAVINGS

5 MBTU/YR

NET DOLLAR SAVINGS

\$73 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6718-BARRACKS

AREA: STAIRWELLS

LAMP USE:

HOURS/DAY 24

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
13 LAMPS @	75	WATTS =	975	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
13 LAMPS @	18	WATTS =	234	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

8,518 KWH

30,663 MJ

ECO ENERGY CONSUMPTION

234 KWH

842 MJ

BASELINE DEMAND

0.98 KW

ECO DEMAND

0.23 KW

NET ENERGY SAVINGS

29,821 MJ/YR

NET DEMAND SAVINGS

\$105 /YR

NET ENERGY SAVINGS

28 MBTU/YR

NET DOLLAR SAVINGS

\$280 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6718

EXIT SIGNS 7 ELECTRIC COSTS:
 CURRENT WATTAGE 30 ENERGY CHARGE \$0.0211 PER KWH
 REPLACEMENT WATTAG 3 DEMAND CHARGE \$11.78 PER KW

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	1840 KWH/YR	ECO ENERGY CONSUMPTION	184 KWH/YR
BASELINE DEMAND	0.21 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1656 KWH/YR	NET DOLLAR SAVINGS	\$62
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Estimate:      Bldg. 6718      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					75.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		27.30	\$0	\$750	\$0	\$0	\$750
0207082121	DEMO. 2X4' FLUOR FIXTURES					35.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		16.98	\$0	\$467	\$0	\$0	\$467
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					3.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.96	\$0	\$26	\$0	\$0	\$26
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					25.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		6.45	\$0	\$178	\$0	\$0	\$178
U02 SITEWORK		52	\$0	\$1,421	\$0	\$0	\$1,421

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					7.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	7.00	\$1,295	\$193	\$0	\$0		\$1,488
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					35.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	49.14	\$3,080	\$1,348	\$0	\$0		\$4,428
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					35.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	52.85	\$2,940	\$1,453	\$0	\$0		\$4,393
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					40.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	45.60	\$2,920	\$1,260	\$0	\$0		\$4,180
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	4.20	\$267	\$116	\$0	\$0		\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					13.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

26-Jul-94

MeansData for Lotus

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Totals	6.50	\$137	\$179	\$0	\$0	\$316
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	5.00 EA	
Totals	5.00	\$128	\$138	\$0	0.00	53.00
					\$0	\$266

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=====
Line #      Description
-----
              Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      171    $10,767    $4,687         $0         $0    $15,454

ESTIMATE TOTAL      223    $10,767    $6,108         $0         $0    $16,875

SALES TAX           5.00%         $538
MATL MARKUP        -40.00%    ($4,307)
LABOR MARKUP       -13.40%         ($818)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $6,999    $5,290         $0         $0    $12,288
CONTINGENCY           10.00%         $1,229
BOND                  2.50%         $307
PROFIT                10.00%         $1,229

JOB TOTAL                                     $15,053
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=====
Estimate:      Bldg. 6718      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
              Manhours   Matl      Labor    Equipment    Sub      Total
=====
U02 SITEWORK      52          $0      $1,421        $0          $0      $1,421
U16 ELECTRICAL    171      $10,767      $4,687        $0          $0      $15,454
TOTAL              223      $10,767      $6,108        $0          $0      $16,875

SALES TAX          5.00%        $538
MATL MARKUP        -40.00%     ($4,307)
LABOR MARKUP        -13.40%          ($818)
EQUIPT MARKUP        0.00%          $0
SUB MARKUP          0.00%          $0

TOTAL BEFORE CONTINGENC  $6,999      $5,290        $0          $0      $12,288
CONTINGENCY          10.00%          $1,229
BOND                  2.50%          $307
PROFIT                10.00%          $1,229
JOB TOTAL                                $15,053

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6719
 AREA: BARRACKS
 AREA USE: _____
 HOURS/DAY: 8
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 87 W/FIXT = 0 WATTS 0.2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS 0.1 LAMP @ 29 W/FIXT = 0.00 WATTS
 3 2 LAMP @ 97 W/FIXT = 291 WATTS 3 2 LAMP @ 58 W/FIXT = 174.00 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0.2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 847 KWH/YR ECO ENERGY CONSUMPTION 507 KWH/YR
 3,051 MJ/YR 1,824 MJ/YR
 BASELINE DEMAND 0.29 KW ECO DEMAND 0.17 KW

NET ENERGY SAVINGS 1,227 MJ/YR NET DEMAND SAVINGS \$17 /YR
 NET ENERGY SAVINGS 1 MBTU/YR NET DOLLAR SAVINGS \$24 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6719
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS
 30 2 LAMP @ 97 W/FIXT = 2,910 WATTS
 30 3 LAMP @ 153 W/FIXT = 4,590 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 30 2 LAMP @ 58 W/FIXT = 1,740.00 WATTS
 30 3 LAMP @ 87 W/FIXT = 2,610.00 WATTS
 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 32,760 KWH/YR ECO ENERGY CONSUMPTION 19,001 KWH/YR
 117,936 MJ/YR 68,403 MJ/YR
 BASELINE DEMAND 7.50 KW ECO DEMAND 4.35 KW

NET ENERGY SAVINGS 49,533 MJ/YR NET DEMAND SAVINGS \$445 /YR
 NET ENERGY SAVINGS 47 MBTU/YR NET DOLLAR SAVINGS \$738 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6719
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 48 2 LAMP U 97 W/FIXT = 4,656 WATTS 58 W/FIXT @ 2,784.00 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0.00 WATTS
 6 3 LAMP @ 153 W/FIXT = 918 WATTS 6 3 LAMP @ 87 W/FIXT = 522.00 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 48,694 KWH/YR ECO ENERGY CONSUMPTION 28,881 KWH/YR
 175,300 MJ/YR 103,972 MJ/YR
 BASELINE DEMAND 5.57 KW ECO DEMAND 3.31 KW

NET ENERGY SAVINGS 71,328 MJ/YR NET DEMAND SAVINGS \$321 /YR
 NET ENERGY SAVINGS 68 MBTU/YR NET DOLLAR SAVINGS \$739 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6719-BARRACKS
 AREA: STAIRWELLS
 LAMP USE: 24
 HOURS/DAY 7
 DAYS/WEEK 1 (1-YES, 2-NO)
 PEAK USE

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52	WATTS =	0	WATTS	
LAMPS @ 60	WATTS =	0	WATTS	
10 LAMPS @ 75	WATTS =	750	WATTS	
LAMPS @ 90	WATTS =	0	WATTS	
LAMPS @ 135	WATTS =	0	WATTS	

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
10 LAMPS @	18	WATTS =	180	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION	6.552 KWH	ECO ENERGY CONSUMPTION	180 KWH
	23,587 MJ		648 MJ
BASELINE DEMAND	0.75 KW	ECO DEMAND	0.18 KW

NET ENERGY SAVINGS	22,939 MJ/YR	NET DEMAND SAVINGS	\$81 /YR
NET ENERGY SAVINGS	22 MBTU/YR	NET DOLLAR SAVINGS	\$215 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6719

EXIT SIGNS 8 ELECTRIC COSTS:
 CURRENT WATTAGE 30 ENERGY CHARGE \$0.0211 PER KWH
 REPLACEMENT WATTAG 3 DEMAND CHARGE \$11.78 PER KW

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	2102 KWH/YR	ECO ENERGY CONSUMPTION	210.2 KWH/YR
BASELINE DEMAND	0.24 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1892 KWH/YR	NET DOLLAR SAVINGS	\$71
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Estimate:      Bldg. 6719          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:     Ft. Campbell        Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					78.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00		10.00
Totals	28.39	\$0	\$780	\$0	\$0		\$780
0207082121	DEMO. 2X4' FLUOR FIXTURES					36.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	17.46	\$0	\$481	\$0	\$0		\$481
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					3.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00		8.80
Totals	0.96	\$0	\$26	\$0	\$0		\$26
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					18.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	4.64	\$0	\$128	\$0	\$0		\$128
U02 SITEWORK	52	\$0	\$1,415	\$0	\$0		\$1,415

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					8.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	8.00	\$1,480	\$220	\$0	\$0		\$1,700
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					48.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	67.39	\$4,224	\$1,848	\$0	\$0		\$6,072
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					36.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	57.60	\$3,240	\$1,584	\$0	\$0		\$4,824
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					30.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	34.20	\$2,190	\$945	\$0	\$0		\$3,135
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	4.20	\$267	\$116	\$0	\$0		\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					10.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

26-Jul-94

MeansData for Lotus

Page 3

Totals	5.00	\$105	\$138	\$0	\$0	\$243
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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=====
Line #      Description
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              Manhours   Matl     Labor   Equipment   Sub       Total
=====
U16 ELECTRICAL      177    $11,506    $4,851         $0         $0    $16,357

ESTIMATE TOTAL      229    $11,506    $6,266         $0         $0    $17,772

SALES TAX           5.00%         $575
MATL MARKUP        -40.00%    ($4,602)
LABOR MARKUP       -13.40%         ($840)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $7,479    $5,426         $0         $0    $12,905
CONTINGENCY           10.00%         $1,291
BOND                  2.50%         $323
PROFIT                10.00%         $1,291

JOB TOTAL                                     $15,809
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Estimate:      Bldg. 6719      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      52      $0      $1,415      $0      $0      $1,415
U16 ELECTRICAL   177    $11,506    $4,851      $0      $0    $16,357
TOTAL            229    $11,506    $6,266      $0      $0    $17,772

SALES TAX         5.00%      $575
MATL MARKUP      -40.00%    ($4,602)
LABOR MARKUP     -13.40%          ($840)
EQUIPT MARKUP    0.00%          $0
SUB MARKUP       0.00%          $0

TOTAL BEFORE CONTINGENC  $7,479    $5,426      $0      $0    $12,905
CONTINGENCY       10.00%          $1,291
BOND               2.50%          $323
PROFIT            10.00%          $1,291
JOB TOTAL                                $15,809

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6725
AREA: BARRACKS
AREA USE: 8
HOURS/DAY: 7
DAYS/WEEK: 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
2 LAMP U 87 W/FIXT = 0 WATTS

4 FOOT
1 LAMP @ 56 W/FIXT = 0 WATTS
3 2 LAMP @ 97 W/FIXT = 291 WATTS
3 LAMP @ 153 W/FIXT = 0 WATTS
4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT
0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
3 2 LAMP @ 58 W/FIXT = 174.00 WATTS
0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 847 KWH/YR ECO ENERGY CONSUMPTION 507 KWH/YR
3,051 MJ/YR 1,824 MJ/YR
BASELINE DEMAND 0.29 KW ECO DEMAND 0.17 KW

NET ENERGY SAVINGS 1,227 MJ/YR NET DEMAND SAVINGS \$17 /YR
NET ENERGY SAVINGS 1 MBTU/YR NET DOLLAR SAVINGS \$24 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6725		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS		0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS		0 1 LAMP @	29 W/FIXT =	0.00 WATTS
	71 2 LAMP @	97 W/FIXT =	6,887 WATTS		71 2 LAMP @	58 W/FIXT =	4,118.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS		0 3 LAMP @	87 W/FIXT =	0.00 WATTS
	8 4 LAMP @	194 W/FIXT =	1,552 WATTS		8 4 LAMP @	118 W/FIXT =	944.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS		0 2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	36,862 KWH/YR	ECO ENERGY CONSUMPTION	22,111 KWH/YR
	132,702 MJ/YR		79,599 MJ/YR
BASELINE DEMAND	8.44 KW	ECO DEMAND	5.06 KW

NET ENERGY SAVINGS	53,103 MJ/YR	NET DEMAND SAVINGS	\$477 YR
NET ENERGY SAVINGS	50 MBTU/YR	NET DOLLAR SAVINGS	\$789 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6725		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	38 2 LAMP U	97 W/FIXT =	3,686 WATTS		38 2 LAMP U @	58 W/FIXT =	2,204.00 WATTS
4 FOOT							
	1 LAMP @	56 W/FIXT =	0 WATTS		0 1 LAMP @	29 W/FIXT =	0.00 WATTS
	2 2 LAMP @	97 W/FIXT =	194 WATTS		2 2 LAMP @	58 W/FIXT =	116.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS		0 3 LAMP @	87 W/FIXT =	0.00 WATTS
	4 LAMP @	194 W/FIXT =	0 WATTS		0 4 LAMP @	118 W/FIXT =	0.00 WATTS
8 FOOT							
	2 LAMP @	180 W/FIXT =	0 WATTS		0 2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	33,896 KWH/YR	ECO ENERGY CONSUMPTION	20,268 KWH/YR
	122,024 MJ/YR		72,963 MJ/YR
BASELINE DEMAND	3.88 KW	ECO DEMAND	2.32 KW

NET ENERGY SAVINGS	49,061 MJ/YR	NET DEMAND SAVINGS	\$221 /YR
NET ENERGY SAVINGS	46 MBTU/YR	NET DOLLAR SAVINGS	\$509 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6725-BARRACKS

AREA: DAYROOM

LAMP USE:

HOURS/DAY 12

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS

4 LAMPS @ 60 WATTS = 240 WATTS

LAMPS @ 75 WATTS = 0 WATTS

LAMPS @ 90 WATTS = 0 WATTS

LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

4 LAMPS @ 13 WATTS = 52 WATTS

0 LAMPS @ 18 WATTS = 0 WATTS

0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

1,048 KWH

3,774 MJ

ECO ENERGY CONSUMPTION

52 KWH

187 MJ

BASELINE DEMAND

0.24 KW

ECO DEMAND

0.05 KW

NET ENERGY SAVINGS

3,587 MJ/YR

NET DEMAND SAVINGS

\$27 /YR

NET ENERGY SAVINGS

3 MBTU/YR

NET DOLLAR SAVINGS

\$48 /YR

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6725-BARRACKS
AREA: STAIRWELLS

<u>ELECTRIC COSTS:</u>		
ENERGY CHARGE	\$0.0211	PER KWH
DEMAND CHARGE	\$11.78	PER KW

HOURS/DAY 24
DAYS/WEEK 7
PEAK USE 1 (1=YES, 2=NO)

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0
LAMPS @	60	WATTS =	0
13 LAMPS @	75	WATTS =	975
LAMPS @	90	WATTS =	0
LAMPS @	135	WATTS =	0

COMPACT FLUORESCENT REPLACEMENT

<u>0 LAMPS @</u>	<u>13 WATTS =</u>	<u>0 WATTS</u>
<u>13 LAMPS @</u>	<u>18 WATTS =</u>	<u>234 WATTS</u>
<u>0 LAMPS @</u>	<u>26 WATTS =</u>	<u>0 WATTS</u>

BASELINE ENERGY CONSUMPTION

8,518 KWH
30,663 MJ

ECO ENERGY CONSUMPTION

234 KWH
842 MJ
0.23 KW

BASELINE DEMAND

0.98 KW

ECO DEMAND

0.23 KW

NET ENERGY SAVINGS

29,821 MJ/YR
28 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$105 /YR
\$280 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6725

EXIT SIGNS 6

CURRENT WATTAGE 30

REPLACEMENT WATTAG 3

HOURS/YEAR 8760

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BASELINE ENERGY CONSUMPTION	1577 KWH/YR	ECO ENERGY CONSUMPTION	157.7 KWH/YR
BASELINE DEMAND	0.18 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1419 KWH/YR	NET DOLLAR SAVINGS	\$53
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Estimate:      Bldg. 6725      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					46.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		16.74	\$0	\$460	\$0	\$0	\$460
0207082121	DEMO. 2X4' FLUOR FIXTURES					73.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		35.41	\$0	\$975	\$0	\$0	\$975
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					3.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.96	\$0	\$26	\$0	\$0	\$26
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					23.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		5.93	\$0	\$163	\$0	\$0	\$163
U02 SITEWORK		60	\$0	\$1,624	\$0	\$0	\$1,624

=====						
Line #	Description					
		Manhours	Matl	Labor	Equipment	Sub Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					6.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	6.00	\$1,110	\$165	\$0	\$0	\$1,275
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					38.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	53.35	\$3,344	\$1,463	\$0	\$0	\$4,807
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					65.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	98.15	\$5,460	\$2,698	\$0	\$0	\$8,158
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					8.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	13.60	\$752	\$376	\$0	\$0	\$1,128
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					8.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	9.12	\$584	\$252	\$0	\$0	\$836
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	4.20	\$267	\$116	\$0	\$0	\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					13.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.50	\$137	\$179	\$0	\$0	\$316
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	4.00 EA	53.00
Totals	4.00	\$102	\$110	\$0	\$0	\$212

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		195	\$11,756	\$5,359	\$0	\$0	\$17,115
ESTIMATE TOTAL		255	\$11,756	\$6,983	\$0	\$0	\$18,739
SALES TAX	5.00%		\$588				
MATL MARKUP	-40.00%		(\$4,702)				
LABOR MARKUP	-13.40%			(\$936)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$7,641	\$6,047	\$0	\$0	\$13,689
CONTINGENCY	10.00%						\$1,369
BOND	2.50%						\$342
PROFIT	10.00%						\$1,369
JOB TOTAL							\$16,769

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Estimate:      Bldg. 6725      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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SUMMARY

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Manhours  Matl    Labor  Equipment  Sub    Total
=====
U02 SITEWORK      60      $0      $1,624      $0      $0      $1,624
U16 ELECTRICAL    195     $11,756     $5,359      $0      $0      $17,115
TOTAL              255     $11,756     $6,983      $0      $0      $18,739

SALES TAX          5.00%      $588
MATL MARKUP        -40.00%    ($4,702)
LABOR MARKUP        -13.40%    ($936)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%
TOTAL BEFORE CONTINGENC  $7,641     $6,047      $0      $0      $13,689
CONTINGENCY         10.00%      $1,369
BOND                 2.50%      $342
PROFIT              10.00%      $1,369
JOB TOTAL                                $16,769

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6726
 AREA: BARRACKS
 HOURS/DAY: 8
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS
 6 2 LAMP @ 97 W/FIXT = 582 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 6 2 LAMP @ 58 W/FIXT = 348.00 WATTS
 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 1,695 KWH/YR ECO ENERGY CONSUMPTION 1,013 KWH/YR
 6,101 MJ/YR 3,648 MJ/YR
 BASELINE DEMAND 0.58 KW ECO DEMAND 0.35 KW

NET ENERGY SAVINGS 2,453 MJ/YR NET DEMAND SAVINGS \$33 /YR
 NET ENERGY SAVINGS 2 MBTU/YR NET DOLLAR SAVINGS \$47 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6726
 AREA: BARRACKS
 HOURS/DAY: 12
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 87 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS
 44 3 LAMP @ 153 W/FIXT = 6,732 WATTS
 12 4 LAMP @ 194 W/FIXT = 2,328 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 0 2 LAMP @ 58 W/FIXT = 0.00 WATTS
 44 3 LAMP @ 87 W/FIXT = 3,828.00 WATTS
 12 4 LAMP @ 118 W/FIXT = 1,416.00 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 39,574 KWH/YR ECO ENERGY CONSUMPTION 22,906 KWH/YR
 142,467 MJ/YR 82,461 MJ/YR
 BASELINE DEMAND 9.06 KW ECO DEMAND 5.24 KW

NET ENERGY SAVINGS 60,006 MJ/YR NET DEMAND SAVINGS \$539 /YR
 NET ENERGY SAVINGS 57 MBTU/YR NET DOLLAR SAVINGS \$892 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6726
AREA: BARRACKS
AREA USE: 24
HOURS/DAY 7
DAYS/WEEK
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
38 2 LAMP U	87 W/FIXT = 3,686 WATTS	1 LAMP @ 56 W/FIXT = 0 WATTS	0 1 LAMP @ 29 W/FIXT = 0.00 WATTS	2 LAMP @ 180 W/FIXT = 0 WATTS	0 2 LAMP @ 125 W/FIXT = 0.00 WATTS
		2 LAMP @ 97 W/FIXT = 0 WATTS	0 2 LAMP @ 58 W/FIXT = 0.00 WATTS		
		3 LAMP @ 163 W/FIXT = 0 WATTS	0 3 LAMP @ 87 W/FIXT = 0.00 WATTS		
		4 LAMP @ 194 W/FIXT = 0 WATTS	0 4 LAMP @ 118 W/FIXT = 0.00 WATTS		

REPLACEMENT FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
38 2 LAMP U @	58 W/FIXT = 2,204.00 WATTS	0 1 LAMP @	29 W/FIXT =	0 2 LAMP @	125 W/FIXT =
		0 2 LAMP @	58 W/FIXT =		
		0 3 LAMP @	87 W/FIXT =		
		0 4 LAMP @	118 W/FIXT =		

BASELINE ENERGY CONSUMPTION 32,201 KWH/YR ECO ENERGY CONSUMPTION 19,254 KWH/YR
115,923 MJ/YR 69,315 MJ/YR

BASELINE DEMAND 3.69 KW ECO DEMAND 2.20 KW

NET ENERGY SAVINGS	46,608 MJ/YR	NET DEMAND SAVINGS	\$209 /YR
NET ENERGY SAVINGS	44 MBTU/YR	NET DOLLAR SAVINGS	\$483 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6726-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
LAMPS @ 60 WATTS = 0 WATTS
12 LAMPS @ 75 WATTS = 900 WATTS
LAMPS @ 90 WATTS = 0 WATTS
LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13 WATTS = 0 WATTS
12 LAMPS @ 18 WATTS = 216 WATTS
0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6726

EXIT SIGNS 7

CURRENT WATTAGE 30

REPLACEMENT WATTAG 3

HOURS/YEAR 8760

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

BASELINE ENERGY CONSUMPTION	1840 KWH/YR	ECO ENERGY CONSUMPTION	184 KWH/YR
BASELINE DEMAND	0.21 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1656 KWH/YR	NET DOLLAR SAVINGS	\$62
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Estimate:      Bldg. 6726          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:      Ft. Campbell       Job #:
Sq. footage:   City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					38.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		13.83	\$0	\$380	\$0	\$0	\$380
0207082121	DEMO. 2X4' FLUOR FIXTURES					56.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		27.16	\$0	\$748	\$0	\$0	\$748
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					6.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		1.92	\$0	\$53	\$0	\$0	\$53
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					19.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.90	\$0	\$135	\$0	\$0	\$135
U02 SITEWORK		48	\$0	\$1,316	\$0	\$0	\$1,316

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					7.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	7.00	\$1,295	\$193	\$0	\$0		\$1,488
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					38.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	53.35	\$3,344	\$1,463	\$0	\$0		\$4,807
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					44.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	70.40	\$3,960	\$1,936	\$0	\$0		\$5,896
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					12.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	20.40	\$1,128	\$564	\$0	\$0		\$1,692
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					6.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	8.40	\$534	\$231	\$0	\$0		\$765
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		166	\$10,387	\$4,552	\$0	\$0	\$14,939
ESTIMATE TOTAL		214	\$10,387	\$5,868	\$0	\$0	\$16,255
SALES TAX	5.00%		\$519				
MATL MARKUP	-40.00%		(\$4,155)				
LABOR MARKUP	-13.40%			(\$786)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$6,752	\$5,082	\$0	\$0	\$11,833
CONTINGENCY	10.00%						\$1,183
BOND	2.50%						\$296
PROFIT	10.00%						\$1,183
JOB TOTAL							\$14,496

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Estimate:      Bldg. 6726          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:      Ft. Campbell       Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      48      $0    $1,316      $0      $0    $1,316
U16 ELECTRICAL   166   $10,387   $4,552      $0      $0   $14,939
TOTAL            214   $10,387   $5,868      $0      $0   $16,255

SALES TAX         5.00%      $519
MATL MARKUP      -40.00%   ($4,155)
LABOR MARKUP     -13.40%      ($786)
EQUIPT MARKUP     0.00%      $0
SUB MARKUP        0.00%      $0

TOTAL BEFORE CONTINGENC  $6,752   $5,082      $0      $0   $11,833
CONTINGENCY        10.00%      $1,183
BOND                2.50%      $296
PROFIT             10.00%      $1,183

JOB TOTAL                                $14,496

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6727
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS
 3 2 LAMP @ 97 W/FIXT = 291 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 3 2 LAMP @ 58 W/FIXT = 174.00 WATTS
 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 847 KWH/YR ECO ENERGY CONSUMPTION 507 KWH/YR
 3,051 MJ/YR 1,824 MJ/YR
 BASELINE DEMAND 0.29 KW ECO DEMAND 0.17 KW

NET ENERGY SAVINGS 1,227 MJ/YR NET DEMAND SAVINGS \$17 YR
 NET ENERGY SAVINGS 1 MBTU/YR NET DOLLAR SAVINGS \$24 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6727	
AREA:	BARRACKS	
AREA USE:		
HOURS/DAY	12	\$0.0211 PER KWH
DAYS/WEEK	7	\$11.78 PER KW
BUILDING VOLTAGE:	277	

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS
	52 2 LAMP @	97 W/FIXT =	5,044 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS
	46 4 LAMP @	194 W/FIXT =	8,924 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0.00 WATTS
	52 2 LAMP @	58 W/FIXT =	3,016.00 WATTS
	0 3 LAMP @	87 W/FIXT =	0.00 WATTS
	46 4 LAMP @	118 W/FIXT =	5,428.00 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0.00 WATTS

BASELINE ENERGY CONSUMPTION	61,012 KWH/YR	ECO ENERGY CONSUMPTION	36,883 KWH/YR
	219,644 MJ/YR		132,780 MJ/YR
BASELINE DEMAND	13.97 KW	ECO DEMAND	8.44 KW

NET ENERGY SAVINGS	86,864 MJ/YR	NET DEMAND SAVINGS	\$781 /YR
NET ENERGY SAVINGS	82 MBTU/YR	NET DOLLAR SAVINGS	\$1,291 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6727
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 38 2 LAMP U 87 W/FIXT = 3,686 WATTS 38 2 LAMP U @ 58 W/FIXT = 2,204.00 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0.00 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 32,201 KWH/YR ECO ENERGY CONSUMPTION 19,254 KWH/YR
 115,923 MJ/YR 69,315 MJ/YR
 BASELINE DEMAND 3.69 KW ECO DEMAND 2.20 KW

NET ENERGY SAVINGS 46,608 MJ/YR NET DEMAND SAVINGS \$209 /YR
 NET ENERGY SAVINGS 44 MBTU/YR NET DOLLAR SAVINGS \$483 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6727-BARRACKS
AREA: STAIRWELLS
LAMP USE: 24
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
LAMPS @ 60 WATTS = 0 WATTS
12 LAMPS @ 75 WATTS = 900 WATTS
LAMPS @ 90 WATTS = 0 WATTS
LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13 WATTS = 0 WATTS
12 LAMPS @ 18 WATTS = 216 WATTS
0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6727

EXIT SIGNS 7 ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 CURRENT WATTAGE 30
 DEMAND CHARGE \$11.78 PER KW
 REPLACEMENT WATTAG 3

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	1840 KWH/YR	ECO ENERGY CONSUMPTION	184 KWH/YR
BASELINE DEMAND	0.21 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1656 KWH/YR	NET DOLLAR SAVINGS	\$62
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Estimate:      Bldg. 6727      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:   City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					50.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		18.20	\$0	\$500	\$0	\$0	\$500
0207082121	DEMO. 2X4' FLUOR FIXTURES					86.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		41.71	\$0	\$1,148	\$0	\$0	\$1,148
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					3.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.96	\$0	\$26	\$0	\$0	\$26
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					19.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.90	\$0	\$135	\$0	\$0	\$135
U02 SITEWORK		66	\$0	\$1,809	\$0	\$0	\$1,809

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					7.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	7.00	\$1,295	\$193	\$0	\$0		\$1,488
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					38.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	53.35	\$3,344	\$1,463	\$0	\$0		\$4,807
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					40.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	60.40	\$3,360	\$1,660	\$0	\$0		\$5,020
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					46.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	78.20	\$4,324	\$2,162	\$0	\$0		\$6,486
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					12.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	13.68	\$876	\$378	\$0	\$0		\$1,254
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	4.20	\$267	\$116	\$0	\$0		\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

```

=====
Line #      Description
-----
            Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      223    $13,592    $6,137         $0        $0    $19,729

ESTIMATE TOTAL      289    $13,592    $7,946         $0        $0    $21,538

SALES TAX           5.00%          $680
MATL MARKUP        -40.00%    ($5,437)
LABOR MARKUP       -13.40%          ($1,065)
EQUIPT MARKUP       0.00%          $0
SUB MARKUP          0.00%          $0

TOTAL BEFORE CONTINGENC    $8,835    $6,881         $0        $0    $15,716
CONTINGENCY           10.00%          $1,572
BOND                  2.50%          $393
PROFIT               10.00%          $1,572

JOB TOTAL                                $19,252

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=====
Estimate:      Bldg. 6727      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      66      $0      $1,809      $0      $0      $1,809
U16 ELECTRICAL    223    $13,592    $6,137      $0      $0    $19,729
TOTAL              289    $13,592    $7,946      $0      $0    $21,538

SALES TAX          5.00%      $680
MATL MARKUP        -40.00%    ($5,437)
LABOR MARKUP        -13.40%    ($1,065)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC  $8,835    $6,881      $0      $0    $15,716
CONTINGENCY          10.00%
BOND                  2.50%
PROFIT                10.00%

JOB TOTAL                                $19,252

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6728	
AREA:	BARRACKS	
HOURS/DAY	8	
DAYS/WEEK	7	
BUILDING VOLTAGE:	277	

ELECTRIC COSTS:	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	\$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
	3 2 LAMP @	97 W/FIXT =	291 WATTS	3 2 LAMP @	58 W/FIXT =	174.00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0.00 WATTS
	4 LAMP @	194 W/FIXT =	0 WATTS	0.4 LAMP @	118 W/FIXT =	0.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	847 KWH/YR	ECO ENERGY CONSUMPTION	507 KWH/YR
BASELINE DEMAND	3,051 MJ/YR	ECO DEMAND	1,824 MJ/YR
	0.29 KW		0.17 KW

NET ENERGY SAVINGS	1,227 MJ/YR	NET DEMAND SAVINGS	\$17 /YR
NET ENERGY SAVINGS	1 MBTU/YR	NET DOLLAR SAVINGS	\$24 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6728		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

REPLACEMENT FIXTURE DATA

2 FOOT	46 2 LAMP U	97 W/FIXT =	4,462 WATTS	46 2 LAMP U @	58 W/FIXT =	2,668 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0 1 LAMP @	28 W/FIXT =	0 WATTS
	93 2 LAMP @	97 W/FIXT =	9,021 WATTS	93 2 LAMP @	58 W/FIXT =	5,394 WATTS
	60 3 LAMP @	153 W/FIXT =	9,180 WATTS	60 3 LAMP @	87 W/FIXT =	5,220 WATTS
	18 4 LAMP @	194 W/FIXT =	3,492 WATTS	18 4 LAMP @	118 W/FIXT =	2,124 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	114,245 KWH/YR	ECO ENERGY CONSUMPTION	67,293 KWH/YR
	411,282 MJ/YR		242,256 MJ/YR
BASELINE DEMAND	26.16 KW	ECO DEMAND	15.41 KW

NET ENERGY SAVINGS	169,026 MJ/YR	NET DEMAND SAVINGS	\$1,519 /YR
NET ENERGY SAVINGS	160 MBTU/YR	NET DOLLAR SAVINGS	\$2,512 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6728
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	42 2 LAMP U	67 W/FIXT =	4 074 WATTS	42 2 LAMP U @	58 W/FIXT =	2 436 00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 00 WATTS
	2 LAMP @	97 W/FIXT =	0 WATTS	0 2 LAMP @	58 W/FIXT =	0 00 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0 00 WATTS
	4 LAMP @	194 W/FIXT =	0 WATTS	0 4 LAMP @	118 W/FIXT =	0 00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	35,590 KWH/YR	ECO ENERGY CONSUMPTION	21,281 KWH/YR
	128,126 MJ/YR		76,611 MJ/YR
BASELINE DEMAND	4.07 KW	ECO DEMAND	2.44 KW

NET ENERGY SAVINGS 51,514 MJ/YR NET DEMAND SAVINGS \$232 YR
 NET ENERGY SAVINGS 49 MBTU/YR NET DOLLAR SAVINGS \$534 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6728-BARRACKS
 AREA: RESTROOMS
 LAMP USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
 6 LAMPS @ 60 WATTS = 360 WATTS
 LAMPS @ 75 WATTS = 0 WATTS
 LAMPS @ 90 WATTS = 0 WATTS
 LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

6 LAMPS @ 13 WATTS = 78 WATTS
 0 LAMPS @ 18 WATTS = 0 WATTS
 0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

1,048 KWH
 3,774 MJ

ECO ENERGY CONSUMPTION

78 KWH
 281 MJ
 0.08 KW

BASELINE DEMAND

0.36 KW

ECO DEMAND

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

3,493 MJ/YR
 3 MBTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$40 /YR
 \$60 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6728-BARRACKS
 AREA: DINING AREA
 LAMP USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: _____

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
 108 LAMPS @ 60 WATTS = 6480 WATTS
 LAMPS @ 75 WATTS = 0 WATTS
 LAMPS @ 90 WATTS = 0 WATTS
 LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

108 LAMPS @ 13 WATTS = 1404 WATTS
 0 LAMPS @ 18 WATTS = 0 WATTS
 0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

28,305 KWH
 101,897 MJ
 6.48 KW

ECO ENERGY CONSUMPTION

1,404 KWH
 5,054 MJ
 1.40 KW

NET ENERGY SAVINGS

96,842 MJ/YR

NET DEMAND SAVINGS

\$718 /YR

NET ENERGY SAVINGS

92 MBTU/YR

NET DOLLAR SAVINGS

\$1,286 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6728-BARRACKS

AREA: STAIRWELLS

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

24

7

1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH

28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH

778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6728

EXIT SIGNS 9 ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 CURRENT WATTAGE 30 DEMAND CHARGE \$11.78 PER KW
 REPLACEMENT WATTAG 3

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	2365 KWH/YR	ECO ENERGY CONSUMPTION	236.5 KWH/YR
BASELINE DEMAND	0.27 KW	ECO DEMAND	0.03 KW

NET ENERGY SAVINGS	2129 KWH/YR	NET DOLLAR SAVINGS	\$79
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Estimate:      Bldg. 6728      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					135.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	49.14	\$0	\$1,350	\$0	\$0	\$1,350	
0207082121	DEMO. 2X4' FLUOR FIXTURES					124.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	60.14	\$0	\$1,655	\$0	\$0	\$1,655	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					3.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	0.96	\$0	\$26	\$0	\$0	\$26	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					135.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	34.83	\$0	\$959	\$0	\$0	\$959	
U02 SITEWORK	146	\$0	\$3,990	\$0	\$0	\$3,990	

=====						
Line #	Description					
		Manhours	Matl	Labor	Equipment	Sub Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					9.00 EA
Unit values		1.00	185.00	27.50	0.00	0.00 212.50
Totals		9.00	\$1,665	\$248	\$0	\$0 \$1,913
1661308803	COMP FLUOR, 9" ROUND REC, 26W QT OPEN REFLECTOR					108.00 EA
Unit values		2.29	0.00	63.00	0.00	0.00 63.00
Totals		247.32	\$0	\$6,804	\$0	\$0 \$6,804
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					88.00 EA
Unit values		1.40	88.00	38.50	0.00	0.00 126.50
Totals		123.55	\$7,744	\$3,388	\$0	\$0 \$11,132
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					46.00 EA
Unit values		1.51	84.00	41.50	0.00	0.00 125.50
Totals		69.46	\$3,864	\$1,909	\$0	\$0 \$5,773
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					60.00 EA
Unit values		1.60	90.00	44.00	0.00	0.00 134.00
Totals		96.00	\$5,400	\$2,640	\$0	\$0 \$8,040
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					18.00 EA
Unit values		1.70	94.00	47.00	0.00	0.00 141.00
Totals		30.60	\$1,692	\$846	\$0	\$0 \$2,538
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					12.00 EA
Unit values		1.14	73.00	31.50	0.00	0.00 104.50
Totals		13.68	\$876	\$378	\$0	\$0 \$1,254
1661309909	SUR FLUOR 1X4' W 2 32W T8					35.00 EA
Unit values		1.14	86.00	31.50	0.00	0.00 117.50
Totals		39.90	\$3,010	\$1,103	\$0	\$0 \$4,113
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values		1.14	90.00	31.50	0.00	0.00 121.50
Totals		0.00	\$0	\$0	\$0	\$0 \$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA
Unit values		1.40	89.00	38.50	0.00	0.00 127.50

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MeansData for Lotus

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Totals	4.20	\$267	\$116	\$0	\$0	\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					
Unit values	0.50	10.50	13.75	0.00	12.00 EA	24.25
Totals	6.00	\$126	\$165	\$0	0.00 \$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	6.00 EA	53.00
Totals	6.00	\$153	\$165	\$0	0.00 \$0	\$318


```
=====
Line #      Description
-----
           Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      646    $24,797   $17,762         $0        $0   $42,559

ESTIMATE TOTAL      792    $24,797   $21,752         $0        $0   $46,549

SALES TAX           5.00%    $1,240
MATL MARKUP        -40.00%   ($9,919)
LABOR MARKUP       -13.40%         ($2,915)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $16,118   $18,837         $0        $0   $34,955
CONTINGENCY          10.00%         $3,496
BOND                 2.50%         $874
PROFIT              10.00%         $3,496

JOB TOTAL                                     $42,820
=====
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=====
Estimate:      Bldg. 6728      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours   Matl   Labor   Equipment   Sub   Total
=====
U02 SITEWORK      146      $0      $3,990      $0      $0      $3,990
U16 ELECTRICAL    646    $24,797    $17,762      $0      $0    $42,559
TOTAL              792    $24,797    $21,752      $0      $0    $46,549

SALES TAX          5.00%    $1,240
MATL MARKUP        -40.00%   ($9,919)
LABOR MARKUP        -13.40%   ($2,915)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $16,118    $18,837      $0      $0    $34,955
CONTINGENCY         10.00%
BOND                 2.50%
PROFIT              10.00%

JOB TOTAL                                $42,820

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6730
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 97 W/FIXT = 0 WATTS 0.2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS 0.1 LAMP @ 29 W/FIXT = 0.00 WATTS
 9 2 LAMP @ 97 W/FIXT = 873 WATTS 9 2 LAMP @ 58 W/FIXT = 522.00 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0.2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 2,542 KWH/YR ECO ENERGY CONSUMPTION 1,520 KWH/YR
 9,152 MJ/YR 5,472 MJ/YR
 BASELINE DEMAND 0.87 KW ECO DEMAND 0.52 KW

NET ENERGY SAVINGS 3,680 MJ/YR NET DEMAND SAVINGS \$50 /YR
 NET ENERGY SAVINGS 3 MBTU/YR NET DOLLAR SAVINGS \$71 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6730		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

2 FOOT	53 2 LAMP U	97 W/FIXT =	5,141 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS
	35 2 LAMP @	97 W/FIXT =	3,395 WATTS
	3 LAMP @	153 W/FIXT =	0 WATTS
	46 4 LAMP @	194 W/FIXT =	8,924 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	53 2 LAMP U @	58 W/FIXT =	3,074 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	35 2 LAMP @	58 W/FIXT =	2,030 WATTS
	0 3 LAMP @	87 W/FIXT =	0 WATTS
	46 4 LAMP @	118 W/FIXT =	5,428 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	76,265 KWH/YR	ECO ENERGY CONSUMPTION	46,004 KWH/YR
	274,555 MJ/YR		165,614 MJ/YR
BASELINE DEMAND	17.46 KW	ECO DEMAND	10.53 KW

NET ENERGY SAVINGS	108,941 MJ/YR	NET DEMAND SAVINGS	\$979 YR
NET ENERGY SAVINGS	103 MBTU/YR	NET DOLLAR SAVINGS	\$1,619 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6730
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 38 2 LAMP U 97 W/FIXT = 3,686 WATTS 38 2 LAMP U @ 58 W/FIXT = 2,204.00 WATTS

4 FOOT

1 LAMP @ 56 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 2 LAMP @ 97 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0.00 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 32,201 KWH/YR ECO ENERGY CONSUMPTION 19,254 KWH/YR
 115,923 MJ/YR 69,315 MJ/YR
 BASELINE DEMAND 3.69 KW ECO DEMAND 2.20 KW

NET ENERGY SAVINGS 46,508 MJ/YR NET DEMAND SAVINGS \$209 /YR
 NET ENERGY SAVINGS 44 MBTU/YR NET DOLLAR SAVINGS \$483 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6730-BARRACKS
 AREA: KITCHEN HALLWAY
 LAMP USE: 12
 HOURS/DAY 7
 DAYS/WEEK 1 (1-YES, 2-NO)
 PEAK USE

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS	0
LAMPS @	60	WATTS =	0	WATTS	0
5 LAMPS @	75	WATTS =	375	WATTS	90
LAMPS @	90	WATTS =	0	WATTS	0
LAMPS @	135	WATTS =	0	WATTS	0

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0
5 LAMPS @	18	WATTS =	90
0 LAMPS @	26	WATTS =	0

BASELINE ENERGY CONSUMPTION	1,638 KWH	ECO ENERGY CONSUMPTION	90 KWH
	5,897 MJ		324 MJ
BASELINE DEMAND	0.38 KW	ECO DEMAND	0.09 KW

NET ENERGY SAVINGS	5,573 MJ/YR	NET DEMAND SAVINGS	\$40 /YR
NET ENERGY SAVINGS	5 MBTU/YR	NET DOLLAR SAVINGS	\$73 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6730-BARRACKS
 AREA: STAIRWELLS
 LAMP USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
 LAMPS @ 60 WATTS = 0 WATTS
 12 LAMPS @ 75 WATTS = 900 WATTS
 LAMPS @ 90 WATTS = 0 WATTS
 LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13 WATTS = 0 WATTS
 12 LAMPS @ 18 WATTS = 216 WATTS
 0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

7.862 KWH
 28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
 778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR LIGHTING

19 AUGUST 1994

EXIT SIGN REPLACEMENT - INCANDESCENT TO LED

BUILDING #: BARRACKS - 6730

EXIT SIGNS 5 ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH

CURRENT WATTAGE 30 DEMAND CHARGE \$11.78 PER KW

REPLACEMENT WATTAG 3

HOURS/YEAR 8760

BASELINE ENERGY CONSUMPTION	1314 KWH/YR	ECO ENERGY CONSUMPTION	131.4 KWH/YR
BASELINE DEMAND	0.15 KW	ECO DEMAND	0.02 KW

NET ENERGY SAVINGS	1183 KWH/YR	NET DOLLAR SAVINGS	\$44
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Estimate:      Bldg. 6730      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					91.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00		10.00
Totals	33.12	\$0	\$910	\$0	\$0		\$910
0207082121	DEMO. 2X4' FLUOR FIXTURES					46.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	22.31	\$0	\$614	\$0	\$0		\$614
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					44.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00		8.80
Totals	14.08	\$0	\$387	\$0	\$0		\$387
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					22.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	5.68	\$0	\$156	\$0	\$0		\$156
U02 SITEWORK	76	\$0	\$2,067	\$0	\$0		\$2,067

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					5.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	5.00	\$925	\$138	\$0	\$0		\$1,063
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					91.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	127.76	\$8,008	\$3,504	\$0	\$0		\$11,512
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					46.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	78.20	\$4,324	\$2,162	\$0	\$0		\$6,486
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					3.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	3.42	\$270	\$95	\$0	\$0		\$365
1661309919	PEND FLUOR 1X4' W 2 32W T8					41.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	57.40	\$3,649	\$1,579	\$0	\$0		\$5,228
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	5.00 EA	53.00
Totals	5.00	\$128	\$138	\$0	\$0	\$266

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16	ELECTRICAL	283	\$17,430	\$7,781	\$0	\$0	\$25,211
	ESTIMATE TOTAL	359	\$17,430	\$9,848	\$0	\$0	\$27,278
	SALES TAX	5.00%	\$872				
	MATL MARKUP	-40.00%	(\$6,972)				
	LABOR MARKUP	-13.40%		(\$1,320)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$11,330	\$8,528	\$0	\$0	\$19,858
	CONTINGENCY	10.00%					\$1,986
	BOND	2.50%					\$496
	PROFIT	10.00%					\$1,986
	JOB TOTAL						\$24,326

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Estimate:      Bldg. 6730      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:     Ft. Campbell    Job #:
Sq. footage:   City indx:
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SUMMARY

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Manhours  Matl    Labor  Equipment  Sub    Total
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U02 SITEWORK      76      $0      $2,067      $0      $0      $2,067
U16 ELECTRICAL   283    $17,430    $7,781      $0      $0    $25,211
TOTAL            359    $17,430    $9,848      $0      $0    $27,278

SALES TAX         5.00%      $872
MATL MARKUP      -40.00%   ($6,972)
LABOR MARKUP     -13.40%   ($1,320)
EQUIPT MARKUP    0.00%
SUB MARKUP       0.00%

TOTAL BEFORE CONTINGENC $11,330    $8,528      $0      $0    $19,858
CONTINGENCY       10.00%           $1,986
BOND              2.50%           $496
PROFIT           10.00%          $1,986
JOB TOTAL                                $24,326

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6731
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 97 W/FIXT = 0 WATTS 0.2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS 0.1 LAMP @ 29 W/FIXT = 0.00 WATTS
 22 2 LAMP @ 97 W/FIXT = 2,134 WATTS 22 2 LAMP @ 58 W/FIXT = 1,276.00 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS 0.3 LAMP @ 87 W/FIXT = 0.00 WATTS
 1 4 LAMP @ 194 W/FIXT = 194 WATTS 1 4 LAMP @ 118 W/FIXT = 118.00 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0.2 LAMP @ 125 W/FIXT = 0.00 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 6,779 KWH/YR ECO ENERGY CONSUMPTION 4,059 KWH/YR
 24,405 MJ/YR 14,614 MJ/YR
 BASELINE DEMAND 2.33 KW ECO DEMAND 1.39 KW

NET ENERGY SAVINGS 9,791 MJ/YR NET DEMAND SAVINGS \$132 /YR
 NET ENERGY SAVINGS 9 MBTU/YR NET DOLLAR SAVINGS \$190 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6731
 AREA: BARRACKS
 AREA USE: _____
 HOURS/DAY: 12
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 56 W/FIXT = 0 WATTS
 34 2 LAMP @ 97 W/FIXT = 3,298 WATTS
 80 3 LAMP @ 153 W/FIXT = 12,240 WATTS
 18 4 LAMP @ 194 W/FIXT = 3,492 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 34 2 LAMP @ 58 W/FIXT = 1,972.00 WATTS
 80 3 LAMP @ 87 W/FIXT = 6,960.00 WATTS
 18 4 LAMP @ 118 W/FIXT = 2,124.00 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 83,123 KWH/YR ECO ENERGY CONSUMPTION 48,293 KWH/YR
 299,243 MJ/YR 173,853 MJ/YR
 BASELINE DEMAND 19.03 KW ECO DEMAND 11.06 KW

NET ENERGY SAVINGS 125,390 MJ/YR NET DEMAND SAVINGS \$1,127 /YR
 NET ENERGY SAVINGS 119 MBTU/YR NET DOLLAR SAVINGS \$1,884 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6731
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
39 2 LAMP U	97 W/FIXT = 3,783 WATTS	39 2 LAMP U @	58 W/FIXT = 2,262.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
5 2 LAMP @	97 W/FIXT = 485 WATTS	5 2 LAMP @	58 W/FIXT = 290.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
37,285 KWH/YR		22,294 KWH/YR	
134,227 MJ/YR		80,259 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
4.27 KW		2.55 KW	

NET ENERGY SAVINGS	53,968 MJ/YR	NET DEMAND SAVINGS	\$243 /YR
NET ENERGY SAVINGS	51 MBTU/YR	NET DOLLAR SAVINGS	\$559 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6731-BARRACKS
AREA: RESTROOMS

LAMP USE: 8
HOURS/DAY: 7
DAYS/WEEK: 1 (1-YES, 2-NO)
PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
5 LAMPS @ 60 WATTS = 300 WATTS
LAMPS @ 75 WATTS = 0 WATTS
LAMPS @ 90 WATTS = 0 WATTS
LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

5 LAMPS @ 13 WATTS = 65 WATTS
0 LAMPS @ 18 WATTS = 0 WATTS
0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

874 KWH
3,145 MJ

ECO ENERGY CONSUMPTION

65 KWH
234 MJ
0.07 KW

BASELINE DEMAND

0.30 KW

ECO DEMAND

NET ENERGY SAVINGS
NET ENERGY SAVINGS

2,911 MJ/YR
3 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$33 /YR
\$50 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6731-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
14 LAMPS @	75	WATTS =	1050	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0	LAMPS	13	WATTS =	0	WATTS
14	LAMPS	18	WATTS =	252	WATTS
0	LAMPS	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

9,173 KWH
33,022 MJ

ECO ENERGY CONSUMPTION

252 KWH
907 MJ

BASELINE DEMAND

1.05 KW

ECO DEMAND

0.25 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

32,115 MJ/YR
30 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$113 /YR
\$301 /YR

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Estimate:      Bldg. 6731      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					66.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		24.02	\$0	\$660	\$0	\$0	\$660
0207082121	DEMO. 2X4' FLUOR FIXTURES					102.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		49.47	\$0	\$1,362	\$0	\$0	\$1,362
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					3.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.96	\$0	\$26	\$0	\$0	\$26
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					19.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.90	\$0	\$135	\$0	\$0	\$135
U02 SITEWORK		80	\$0	\$2,183	\$0	\$0	\$2,183

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					11.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	15.44	\$968	\$424	\$0	\$0		\$1,392
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					3.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	4.53	\$252	\$125	\$0	\$0		\$377
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					80.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	128.00	\$7,200	\$3,520	\$0	\$0		\$10,720
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					19.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	32.30	\$1,786	\$893	\$0	\$0		\$2,679
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					55.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	62.70	\$4,015	\$1,733	\$0	\$0		\$5,748
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					3.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	4.20	\$267	\$116	\$0	\$0		\$383
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	7.00 EA 0.00	53.00
Totals	7.00	\$179	\$193	\$0	\$0	\$372

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Line #      Description
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      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      261    $14,793    $7,169         $0        $0    $21,962

ESTIMATE TOTAL      341    $14,793    $9,352         $0        $0    $24,145

SALES TAX           5.00%      $740
MATL MARKUP        -40.00%    ($5,917)
LABOR MARKUP       -13.40%          ($1,253)
EQUIPT MARKUP       0.00%          $0
SUB MARKUP          0.00%          $0

TOTAL BEFORE CONTINGENC    $9,615    $8,099         $0        $0    $17,714
CONTINGENCY           10.00%          $1,771
BOND                  2.50%          $443
PROFIT                10.00%          $1,771

JOB TOTAL                                $21,700
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Estimate:      Bldg. 6731      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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SUMMARY

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Manhours   Matl   Labor   Equipment   Sub   Total
=====
U02 SITEWORK      80      $0      $2,183      $0      $0      $2,183
U16 ELECTRICAL   261    $14,793    $7,169      $0      $0    $21,962
TOTAL            341    $14,793    $9,352      $0      $0    $24,145

SALES TAX         5.00%      $740
MATL MARKUP      -40.00%    ($5,917)
LABOR MARKUP     -13.40%    ($1,253)
EQUIPT MARKUP    0.00%
SUB MARKUP       0.00%

TOTAL BEFORE CONTINGENC   $9,615    $8,099      $0      $0    $17,714
CONTINGENCY          10.00%      $1,771
BOND                 2.50%      $443
PROFIT              10.00%      $1,771
JOB TOTAL                                $21,700

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6732
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT
 1 LAMP @ 56 W/FIXT = 0 WATTS
 20 2 LAMP @ 97 W/FIXT = 1,940 WATTS
 3 LAMP @ 153 W/FIXT = 0 WATTS
 4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
 20 2 LAMP @ 58 W/FIXT = 1,160.00 WATTS
 0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
 0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 5,649 KWH/YR ECO ENERGY CONSUMPTION 3,378 KWH/YR
 20,337 MJ/YR 12,161 MJ/YR
 BASELINE DEMAND 1.94 KW ECO DEMAND 1.16 KW

NET ENERGY SAVINGS 8,177 MJ/YR NET DEMAND SAVINGS \$110 /YR
 NET ENERGY SAVINGS 8 MBTU/YR NET DOLLAR SAVINGS \$158 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6732
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY 7
 DAYS/WEEK 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	97 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0.00 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0.00 WATTS
	51 2 LAMP @	97 W/FIXT =	4,947 WATTS	51 2 LAMP @	58 W/FIXT =	2,958.00 WATTS
	35 3 LAMP @	153 W/FIXT =	5,355 WATTS	35 3 LAMP @	87 W/FIXT =	3,045.00 WATTS
	47 4 LAMP @	194 W/FIXT =	9,118 WATTS	47 4 LAMP @	118 W/FIXT =	5,546.00 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0.00 WATTS

REPLACEMENT FIXTURE DATA

BASLINE ENERGY CONSUMPTION	84,827 KWH/YR	ECO ENERGY CONSUMPTION	50,446 KWH/YR
	305,376 MJ/YR		181,606 MJ/YR
BASLINE DEMAND	19.42 KW	ECO DEMAND	11.55 KW

NET ENERGY SAVINGS 123,770 MJ/YR
 NET ENERGY SAVINGS 117 MBTU/YR
 NET DEMAND SAVINGS \$1,113 /YR
 NET DOLLAR SAVINGS \$1,839 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6732
AREA: BARRACKS
AREA USE: 24
HOURS/DAY: 7
DAYS/WEEK: 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
38 2 LAMP U 97 W/FIXT = 3,686 WATTS

4 FOOT
1 LAMP @ 56 W/FIXT = 0 WATTS
1 2 LAMP @ 97 W/FIXT = 97 WATTS
3 LAMP @ 153 W/FIXT = 0 WATTS
4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
38 2 LAMP U @ 58 W/FIXT = 2,204.00 WATTS

4 FOOT
0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
1 2 LAMP @ 58 W/FIXT = 58.00 WATTS
0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 33,048 KWH/YR ECO ENERGY CONSUMPTION 19,761 KWH/YR
118,974 MJ/YR 71,139 MJ/YR

3.78 KW 2.26 KW

ECO DEMAND

NET ENERGY SAVINGS 47,835 MJ/YR NET DEMAND SAVINGS \$215 /YR
NET ENERGY SAVINGS 45 MBTU/YR NET DOLLAR SAVINGS \$496 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6732-BARRACKS

AREA: RESTROOMS

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

8

7

1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
4 LAMPS @	60	WATTS =	240	WATTS
LAMPS @	75	WATTS =	0	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

4 LAMPS @	13	WATTS =	52	WATTS
0 LAMPS @	18	WATTS =	0	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

699 KWH

2,516 MJ

0.24 KW

ECO ENERGY CONSUMPTION

52 KWH

187 MJ

0.05 KW

BASELINE DEMAND

ECO DEMAND

NET ENERGY SAVINGS

2,328 MJ/YR

2 MBTU/YR

NET DEMAND SAVINGS

\$27 /YR

NET DOLLAR SAVINGS

\$40 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6732-BARRACKS
AREA: STAIRWELLS & HALLWAYS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK: 7
PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
4 LAMPS @ 60 WATTS = 240 WATTS
12 LAMPS @ 75 WATTS = 900 WATTS
LAMPS @ 90 WATTS = 0 WATTS
LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

4 LAMPS @ 13 WATTS = 52 WATTS
12 LAMPS @ 18 WATTS = 216 WATTS
0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

9,959 KWH
35,853 MJ

ECO ENERGY CONSUMPTION

268 KWH
965 MJ

BASELINE DEMAND

1.14 KW

ECO DEMAND

0.27 KW

NET ENERGY SAVINGS

34,888 MJ/YR

NET DEMAND SAVINGS

\$123 /YR

NET ENERGY SAVINGS

33 MBTU/YR

NET DOLLAR SAVINGS

\$328 /YR

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=====
Estimate:      Bldg. 6732      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					83.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		30.21	\$0	\$830	\$0	\$0	\$830
0207082121	DEMO. 2X4' FLUOR FIXTURES					89.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		43.17	\$0	\$1,188	\$0	\$0	\$1,188
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					20.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		6.40	\$0	\$176	\$0	\$0	\$176
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					20.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		5.16	\$0	\$142	\$0	\$0	\$142
U02 SITEWORK		85	\$0	\$2,336	\$0	\$0	\$2,336

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					38.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	53.35	\$3,344	\$1,463	\$0	\$0	\$4,807
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					7.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	10.57	\$588	\$291	\$0	\$0	\$879
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					35.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	56.00	\$3,150	\$1,540	\$0	\$0	\$4,690
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					47.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	79.90	\$4,418	\$2,209	\$0	\$0	\$6,627
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					45.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	51.30	\$3,285	\$1,418	\$0	\$0	\$4,703
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					20.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	28.00	\$1,780	\$770	\$0	\$0	\$2,550
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

26-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	8.00 EA 0.00	53.00
Totals	8.00	\$204	\$220	\$0	\$0	\$424

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		294	\$16,895	\$8,076	\$0	\$0	\$24,971
ESTIMATE TOTAL		379	\$16,895	\$10,412	\$0	\$0	\$27,307
SALES TAX	5.00%		\$845				
MATL MARKUP	-40.00%		(\$6,758)				
LABOR MARKUP	-13.40%			(\$1,395)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$10,982	\$9,017	\$0	\$0	\$19,999
CONTINGENCY	10.00%						\$2,000
BOND	2.50%						\$500
PROFIT	10.00%						\$2,000
JOB TOTAL							\$24,498


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=====
Estimate:      Bldg. 6732          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:      Ft. Campbell       Job #:
Sq. footage:   City indx:
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SUMMARY

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              Manhours   Matl      Labor   Equipment   Sub      Total
=====
U02 SITEWORK          85         $0      $2,336         $0         $0      $2,336
U16 ELECTRICAL       294      $16,895      $8,076         $0         $0      $24,971
TOTAL                 379      $16,895     $10,412         $0         $0      $27,307

SALES TAX             5.00%         $845
MATL MARKUP          -40.00%      ($6,758)
LABOR MARKUP         -13.40%           ($1,395)
EQUIPT MARKUP         0.00%           $0
SUB MARKUP            0.00%           $0

TOTAL BEFORE CONTINGENC $10,982     $9,017         $0         $0      $19,999
CONTINGENCY           10.00%           $2,000
BOND                   2.50%           $500
PROFIT                 10.00%           $2,000
JOB TOTAL                                     $24,498

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6733
AREA: BARRACKS

AREA USE:
HOURS/DAY 8
DAYS/WEEK 7

BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
2 LAMP U 97 W/FIXT = 0 WATTS

4 FOOT
1 LAMP @ 56 W/FIXT = 0 WATTS
6 2 LAMP @ 97 W/FIXT = 582 WATTS
3 LAMP @ 153 W/FIXT = 0 WATTS
4 LAMP @ 194 W/FIXT = 0 WATTS

8 FOOT
2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
0 2 LAMP U @ 58 W/FIXT = 0.00 WATTS

4 FOOT
0 1 LAMP @ 29 W/FIXT = 0.00 WATTS
6 2 LAMP @ 58 W/FIXT = 348.00 WATTS
0 3 LAMP @ 87 W/FIXT = 0.00 WATTS
0 4 LAMP @ 118 W/FIXT = 0.00 WATTS

8 FOOT
0 2 LAMP @ 125 W/FIXT = 0.00 WATTS

BASELINE ENERGY CONSUMPTION 1,695 KWH/YR ECO ENERGY CONSUMPTION 1,013 KWH/YR
6,101 MJ/YR 3,648 MJ/YR
0.58 KW ECO DEMAND 0.35 KW

NET ENERGY SAVINGS 2,453 MJ/YR NET DEMAND SAVINGS \$33 /YR
NET ENERGY SAVINGS 2 MBTU/YR NET DOLLAR SAVINGS \$47 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6733
AREA: BARRACKS
AREA USE: 12
HOURS/DAY: 7
DAYS/WEEK: 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	49 2 LAMP U	97 W/FIXT =	4,753 WATTS
4 FOOT	1 LAMP @	56 W/FIXT =	0 WATTS
	30 2 LAMP @	97 W/FIXT =	2,910 WATTS
	34 3 LAMP @	153 W/FIXT =	5,202 WATTS
	35 4 LAMP @	194 W/FIXT =	6,790 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	49 2 LAMP U @	58 W/FIXT =	2,842 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	30 2 LAMP @	58 W/FIXT =	1,740 WATTS
	34 3 LAMP @	87 W/FIXT =	2,958 WATTS
	35 4 LAMP @	118 W/FIXT =	4,130 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	85,853 KWH/YR	ECO ENERGY CONSUMPTION	50,975 KWH/YR
	309,071 MJ/YR		183,508 MJ/YR
BASELINE DEMAND	19.66 KW	ECO DEMAND	11.67 KW

NET ENERGY SAVINGS	125,563 MJ/YR	NET DEMAND SAVINGS	\$1,129 /YR
NET ENERGY SAVINGS	119 MBTU/YR	NET DOLLAR SAVINGS	\$1,866 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6733
AREA: BARRACKS
AREA USE: 24
HOURS/DAY 7
DAYS/WEEK
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
42 2 LAMP U	97 W/FIXT = 4,074 WATTS	42 2 LAMP U @	58 W/FIXT = 2,436.00 WATTS
4 FOOT		4 FOOT	
1 LAMP @	56 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0.00 WATTS
2 LAMP @	97 W/FIXT = 0 WATTS	0 2 LAMP @	58 W/FIXT = 0.00 WATTS
3 LAMP @	153 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0.00 WATTS
4 LAMP @	194 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0.00 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0.00 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
35,590 KWH/YR		21,281 KWH/YR	
128,126 MJ/YR		76,611 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
4.07 KW		2.44 KW	

NET ENERGY SAVINGS	51,514 MJ/YR	NET DEMAND SAVINGS	\$232 YR
NET ENERGY SAVINGS	49 MBTU/YR	NET DOLLAR SAVINGS	\$534 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6733-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS
NET ENERGY SAVINGS

27,527 MJ/YR
26 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$97 /YR
\$258 /YR

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=====
Estimate:      Bldg. 6733          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:     Ft. Campbell        Job #:
Sq. footage:  City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					91.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00		10.00
Totals	33.12	\$0	\$910	\$0	\$0		\$910
0207082121	DEMO. 2X4' FLUOR FIXTURES					71.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	34.44	\$0	\$948	\$0	\$0		\$948
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					36.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00		8.80
Totals	11.52	\$0	\$317	\$0	\$0		\$317
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					12.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	3.10	\$0	\$85	\$0	\$0		\$85
U02 SITEWORK	83	\$0	\$2,260	\$0	\$0		\$2,260

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					91.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	127.76	\$8,008	\$3,504	\$0	\$0	\$11,512
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					36.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	57.60	\$3,240	\$1,584	\$0	\$0	\$4,824
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					35.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	59.50	\$3,290	\$1,645	\$0	\$0	\$4,935
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					36.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	50.40	\$3,204	\$1,386	\$0	\$0	\$4,590
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0


```
=====
Line #      Description
-----
              Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      302    $17,868    $8,284         $0         $0    $26,152

ESTIMATE TOTAL      385    $17,868    $10,544         $0         $0    $28,412

SALES TAX           5.00%         $893
MATL MARKUP        -40.00%    ($7,147)
LABOR MARKUP       -13.40%         ($1,413)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $11,614    $9,131         $0         $0    $20,745
CONTINGENCY          10.00%         $2,075
BOND                 2.50%         $519
PROFIT               10.00%         $2,075

JOB TOTAL                                     $25,413
=====
```

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=====
Estimate:      Bldg. 6733      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:                      City indx:
=====

```

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	83	\$0	\$2,260	\$0	\$0	\$2,260
U16 ELECTRICAL	302	\$17,868	\$8,284	\$0	\$0	\$26,152
TOTAL	385	\$17,868	\$10,544	\$0	\$0	\$28,412
SALES TAX	5.00%	\$893				
MATL MARKUP	-40.00%	(\$7,147)				
LABOR MARKUP	-13.40%		(\$1,413)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$11,614	\$9,131	\$0	\$0	\$20,745
CONTINGENCY	10.00%					\$2,075
BOND	2.50%					\$519
PROFIT	10.00%					\$2,075
JOB TOTAL						\$25,413

DIVIDER PAGE

PREVIOUS SECTION 3200 & 6700

NEXT SECTION 6900 BARRACKS

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: BARRPRT2
LCCID 1.080

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: KWBPR2 INTERIOR LIGHTING - 6900 BARRACKS

FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING

ANALYSIS DATE: 09-14-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLENSBE

1. INVESTMENT

A. CONSTRUCTION COST	\$	553564.	
B. SIOH	\$	27678.	
C. DESIGN COST	\$	27678.	
D. TOTAL COST (1A+1B+1C)	\$	608920.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	\$	0.	
F. PUBLIC UTILITY COMPANY REBATE	\$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)	\$		608920.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST \$/MBTU(1)	SAVINGS MBTU/YR(2)	ANNUAL \$ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	\$ 6.18	4379.	\$ 27062.	12.43	\$ 336383.
B. DIST	\$.00	0.	\$ 0.	13.56	\$ 0.
C. RESID	\$.00	0.	\$ 0.	15.09	\$ 0.
D. NAT G	\$.00	0.	\$ 0.	15.86	\$ 0.
E. COAL	\$.00	0.	\$ 0.	13.61	\$ 0.
F. LPG	\$.00	0.	\$ 0.	12.64	\$ 0.
M. DEMAND SAVINGS			\$ 29730.	11.85	\$ 352301.
N. TOTAL		4379.	\$ 56792.		\$ 688684.

3. NON ENERGY SAVINGS (+) / COST (-)

A. ANNUAL RECURRING (+/-)

(1) DISCOUNT FACTOR (TABLE A)	11.85	\$ 10405.
(2) DISCOUNTED SAVING/COST (3A X 3A1)		\$ 123299.

B. NON RECURRING SAVINGS (+) / COSTS (-)

ITEM	SAVINGS (+) COST (-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS (+) / COST (-) (4)
------	--------------------------------	-----------------	------------------------	---

d. TOTAL \$ 0. 0.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+) / COST (-) (3A2+3Bd4) \$ 123299.

4. FIRST YEAR DOLLAR SAVINGS $2N3+3A+(3Bd1/(YRS\ ECONOMIC\ LIFE))$ \$ 67197.

5. SIMPLE PAYBACK PERIOD (1G/4) 9.06 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 811983.

7. SAVINGS TO INVESTMENT RATIO (SIR) = $(6 / 1G) =$ 1.33
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 5.10 %

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6909
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 2 LAMP U 92 W/FIXT = 0 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS
 11 2 LAMP @ 92 W/FIXT = 1,012 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS
 4 LAMP @ 184 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 11 2 LAMP @ 58 W/FIXT = 638 WATTS
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 0 4 LAMP @ 118 W/FIXT = 0 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 2,947 KWH/YR ECO ENERGY CONSUMPTION 1,858 KWH/YR
 10,609 MJ/YR 6,688 MJ/YR
 BASELINE DEMAND 1.01 KW ECO DEMAND 0.64 KW

NET ENERGY SAVINGS 3,921 MJ/YR NET DEMAND SAVINGS \$53 /YR
 NET ENERGY SAVINGS 4 MBTU/YR NET DOLLAR SAVINGS \$76 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6909		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS
	52 2 LAMP @	92 W/FIXT =	4784 WATTS
	38 3 LAMP @	137 W/FIXT =	5206 WATTS
	23 4 LAMP @	184 W/FIXT =	4232 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	52 2 LAMP @	58 W/FIXT =	3016 WATTS
	38 3 LAMP @	87 W/FIXT =	3306 WATTS
	23 4 LAMP @	118 W/FIXT =	2714 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	62,122 KWH/YR	ECO ENERGY CONSUMPTION	39,469 KWH/YR
	223,638 MJ/YR		142,089 MJ/YR
BASELINE DEMAND	14.22 KW	ECO DEMAND	9.04 KW

NET ENERGY SAVINGS	81,549 MJ/YR	NET DEMAND SAVINGS	\$733 /YR
NET ENERGY SAVINGS	77.29 MBTU/YR	NET DOLLAR SAVINGS	\$1,211 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6909		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
35 2 LAMP U	92 W/FIXT = 3,220 WATTS	35 2 LAMP U @	58 W/FIXT = 2,030 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
3 2 LAMP @	92 W/FIXT = 276 WATTS	3 2 LAMP @	58 W/FIXT = 174 WATTS
4 3 LAMP @	137 W/FIXT = 548 WATTS	4 3 LAMP @	87 W/FIXT = 348 WATTS
4 4 LAMP @	184 W/FIXT = 736 WATTS	4 4 LAMP @	118 W/FIXT = 472 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION	41,758 KWH/YR	ECO ENERGY CONSUMPTION	26,418 KWH/YR
	150,329 MJ/YR		95,104 MJ/YR
BASELINE DEMAND	4.78 KW	ECO DEMAND	3.02 KW

NET ENERGY SAVINGS	55,225 MJ/YR	NET DEMAND SAVINGS	\$248 /YR
NET ENERGY SAVINGS	52 MBTU/YR	NET DOLLAR SAVINGS	\$573 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6909-BARRACKS

AREA: OFFICES

LAMP USE:

HOURS/DAY 12

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
5 LAMPS @	75	WATTS =	375	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
5 LAMPS @	18	WATTS =	90	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

1,638 KWH

5,897 MJ

ECO ENERGY CONSUMPTION

90 KWH

324 MJ

BASELINE DEMAND

0.38 KW

ECO DEMAND

0.09 KW

NET ENERGY SAVINGS

5,573 MJ/YR

NET DEMAND SAVINGS

\$40 /YR

NET ENERGY SAVINGS

5 MBTU/YR

NET DOLLAR SAVINGS

\$73 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6909-BARRACKS
AREA: STAIRWELLS

LAMP USE:
HOURS/DAY 24
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS
NET ENERGY SAVINGS

27,527 MJ/YR
28 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$97 /YR
\$258 /YR

25-Jul-94

MeansData for Lotus

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=====
Estimate:      Bldg. 6909      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

```

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					101.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	36.76	\$0	\$1,010	\$0	\$0	\$1,010	
0207082121	DEMO. 2X4' FLUOR FIXTURES					69.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	33.47	\$0	\$921	\$0	\$0	\$921	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	0.00	\$0	\$0	\$0	\$0	\$0	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					17.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	4.39	\$0	\$121	\$0	\$0	\$121	
U02 SITEWORK	75	\$0	\$2,052	\$0	\$0	\$2,052	

```

=====
Line #      Description
-----
            Manhours  Matl    Labor  Equipment  Sub      Total
=====
1661307777  L.E.D. EXIT SIGN
            SINGLE FACE
Unit values 1.00    185.00    27.50    0.00    0.00 EA    212.50
Totals      0.00      $0        $0        $0        $0        $0

1661309801  REC FLUOR TROFFER 2X2' W 2 31W T8-U
            ACRYLIC LENS
Unit values 1.40     88.00    38.50    0.00    35.00 EA    126.50
Totals      49.14    $3,080    $1,348    $0        $0        $4,428

1661309802  REC FLUOR TROFFER 2X4' W 2 32W T8
            ACRYLIC LENS
Unit values 1.51     84.00    41.50    0.00    0.00 EA    125.50
Totals      0.00      $0        $0        $0        $0        $0

1661309803  REC FLUOR TROFFER 2X4' W 3 32W T8
            ACRYLIC LENS
Unit values 1.60     90.00    44.00    0.00    42.00 EA    134.00
Totals      67.20    $3,780    $1,848    $0        $0        $5,628

1661309804  REC FLUOR TROFFER 2X4' W 4 32W T8
            ACRYLIC LENS
Unit values 1.70     94.00    47.00    0.00    27.00 EA    141.00
Totals      45.90    $2,538    $1,269    $0        $0        $3,807

1661309807  REC FLUOR TROFFER 1X4' W 2 32W T8
            ACRYLIC LENS
Unit values 1.14     73.00    31.50    0.00    66.00 EA    104.50
Totals      75.24    $4,818    $2,079    $0        $0        $6,897

1661309909  SUR FLUOR 1X4' W 2 32W T8
Unit values 1.14     86.00    31.50    0.00    0.00 EA    117.50
Totals      0.00      $0        $0        $0        $0        $0

1661309910  INDUSTRIAL FLUOR 1X4' W 2 32W T8
            TWO-PIECE REFLECTOR
Unit values 1.14     90.00    31.50    0.00    0.00 EA    121.50
Totals      0.00      $0        $0        $0        $0        $0

1661309919  PEND FLUOR 1X4' W 2 32W T8
Unit values 1.40     89.00    38.50    0.00    0.00 EA    127.50
Totals      0.00      $0        $0        $0        $0        $0

1661388040  COMP FLUOR LAMP, 26 W QUAD
Unit values 0.50     10.50    13.75    0.00    12.00 EA    24.25

```

25-Jul-94

MeansData for Lotus

Page 3

Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	5.00 EA	53.00
Totals	5.00	\$128	\$138	\$0	\$0	\$266

```
=====
Line #      Description
-----
           Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      249    $14,470    $6,847         $0        $0    $21,317

ESTIMATE TOTAL      324    $14,470    $8,899         $0        $0    $23,369

SALES TAX           5.00%      $724
MATL MARKUP        -40.00%    ($5,788)
LABOR MARKUP       -13.40%          ($1,192)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $9,406    $7,707         $0        $0    $17,112
CONTINGENCY           10.00%          $1,711
BOND                  2.50%          $428
PROFIT               10.00%          $1,711

JOB TOTAL                                $20,962
=====
```

```

=====
Estimate:      Bldg. 6909      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

```

SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      75      $0    $2,052      $0      $0    $2,052
U16 ELECTRICAL   249   $14,470   $6,847      $0      $0   $21,317
TOTAL            324   $14,470   $8,899      $0      $0   $23,369

SALES TAX         5.00%      $724
MATL MARKUP       -40.00%   ($5,788)
LABOR MARKUP      -13.40%   ($1,192)
EQUIPT MARKUP     0.00%
SUB MARKUP        0.00%

TOTAL BEFORE CONTINGENC  $9,406   $7,707      $0      $0   $17,112
CONTINGENCY        10.00%           $1,711
BOND                2.50%           $428
PROFIT              10.00%           $1,711
JOB TOTAL                                     $20,962

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6910
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 11 2 LAMP @ 92 W/FIXT = 1,012 WATTS 11 2 LAMP @ 58 W/FIXT = 638 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 40 4 LAMP @ 184 W/FIXT = 7,360 WATTS 40 4 LAMP @ 118 W/FIXT = 4,720 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 36,569 KWH/YR ECO ENERGY CONSUMPTION 23,404 KWH/YR
 131,648 MJ/YR 84,253 MJ/YR
 BASELINE DEMAND 8.37 KW ECO DEMAND 5.36 KW

NET ENERGY SAVINGS 47,395 MJ/YR NET DEMAND SAVINGS \$426 /YR
 NET ENERGY SAVINGS 45 MBTU/YR NET DOLLAR SAVINGS \$704 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6910
 AREA: BARRACKS
 HOURS/DAY: 24
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 35 2 LAMP U 92 W/FIXT = 3,220 WATTS
 2 FOOT 35 2 LAMP U @ 58 W/FIXT = 2,030 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS
 2 LAMP @ 92 W/FIXT = 0 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS
 2 4 LAMP @ 184 W/FIXT = 368 WATTS
 4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 0 2 LAMP @ 58 W/FIXT = 0 WATTS
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 2 4 LAMP @ 118 W/FIXT = 236 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS
 8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 31,345 KWH/YR
 112,841 MJ/YR
 ECO ENERGY CONSUMPTION 19,796 KWH/YR
 71,265 MJ/YR

BASELINE DEMAND 3.59 KW
 ECO DEMAND 2.27 KW

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

41,576 MJ/YR
 39 MBTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$187 /YR
 \$431 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6910-BARRACKS

AREA: SUPPLY ROOM

LAMP USE:

8

HOURS/DAY

7

DAYS/WEEK

1 (1-YES, 2-NO)

1

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
4 LAMPS @	75	WATTS =	300	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
4 LAMPS @	18	WATTS =	72	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

874 KWH

3,145 MJ

ECO ENERGY CONSUMPTION

72 KWH

259 MJ

BASELINE DEMAND

0.30 KW

ECO DEMAND

0.07 KW

NET ENERGY SAVINGS

2,886 MJ/YR

NET DEMAND SAVINGS

\$32 /YR

NET ENERGY SAVINGS

3 MBTU/YR

NET DOLLAR SAVINGS

\$49 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6910-BARRACKS

AREA: STAIRWELLS

LAMP USE: 24

HOURS/DAY 7

DAYS/WEEK 1

PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52	WATTS = 0	WATTS
LAMPS @ 60	WATTS = 0	WATTS
12 LAMPS @ 75	WATTS = 900	WATTS
LAMPS @ 90	WATTS = 0	WATTS
LAMPS @ 135	WATTS = 0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13	WATTS = 0	WATTS
12 LAMPS @ 18	WATTS = 216	WATTS
0 LAMPS @ 26	WATTS = 0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH

28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH

778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

28 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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Estimate:      Bldg. 6910      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					40.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		14.56	\$0	\$400	\$0	\$0	\$400
0207082121	DEMO. 2X4' FLUOR FIXTURES					52.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		25.22	\$0	\$694	\$0	\$0	\$694
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					16.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.13	\$0	\$114	\$0	\$0	\$114
U02 SITEWORK		44	\$0	\$1,208	\$0	\$0	\$1,208

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN					
	SINGLE FACE				0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U					
	ACRYLIC LENS				35.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	49.14	\$3,080	\$1,348	\$0	\$0	\$4,428
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8					
	ACRYLIC LENS				6.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	9.06	\$504	\$249	\$0	\$0	\$753
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8					
	ACRYLIC LENS				0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8					
	ACRYLIC LENS				46.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	78.20	\$4,324	\$2,162	\$0	\$0	\$6,486
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8					
	ACRYLIC LENS				5.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	5.70	\$365	\$158	\$0	\$0	\$523
1661309909	SUR FLUOR 1X4' W 2 32W T8					
					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
	TWO-PIECE REFLECTOR				0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					
					0.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					
					12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	4.00 EA 0.00	53.00
Totals	4.00	\$102	\$110	\$0	\$0	\$212

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Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      153    $8,501    $4,192         $0        $0    $12,693

ESTIMATE TOTAL      197    $8,501    $5,400         $0        $0    $13,901

SALES TAX           5.00%      $425
MATL MARKUP        -40.00%    ($3,400)
LABOR MARKUP       -13.40%          ($724)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $5,526    $4,676         $0        $0    $10,202
CONTINGENCY           10.00%          $1,020
BOND                   2.50%          $255
PROFIT                 10.00%          $1,020

JOB TOTAL                                $12,498
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Estimate:      Bldg. 6910      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      44      $0      $1,208      $0      $0      $1,208
U16 ELECTRICAL    153     $8,501     $4,192      $0      $0     $12,693
TOTAL              197     $8,501     $5,400      $0      $0     $13,901

SALES TAX          5.00%      $425
MATL MARKUP        -40.00%    ($3,400)
LABOR MARKUP        -13.40%           ($724)
EQUIPT MARKUP       0.00%           $0
SUB MARKUP          0.00%           $0

TOTAL BEFORE CONTINGENC  $5,526     $4,676      $0      $0     $10,202
CONTINGENCY          10.00%           $1,020
BOND                  2.50%           $255
PROFIT                10.00%           $1,020
JOB TOTAL                                $12,498

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6911
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 2 LAMP @ 92 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0 WATTS
 8 3 LAMP @ 137 W/FIXT = 1,096 WATTS 8 3 LAMP @ 87 W/FIXT = 696 WATTS
 4 LAMP @ 184 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 3,192 KWH/YR ECO ENERGY CONSUMPTION 2,027 KWH/YR
 11,490 MJ/YR 7,296 MJ/YR
 BASELINE DEMAND 1.10 KW ECO DEMAND 0.70 KW

NET ENERGY SAVINGS 4,193 MJ/YR NET DEMAND SAVINGS \$57 /YR
 NET ENERGY SAVINGS 4 MBTU/YR NET DOLLAR SAVINGS \$81 /YR

19 AUGUST 1994

BUILDING #: 6911
AREA: BARRACKS

<u>ELECTRIC COSTS:</u>	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	<u>\$11.78 PER KW</u>

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT	2 FOOT
2 LAMP U	2 LAMP U
92 W/EXT =	0 W/EXT =
0 WATTS	0 WATTS
0.2 LAMP U @	0.2 LAMP U @
58 W/EXT =	58 W/EXT =
0 WATTS	0 WATTS

4 FOOT			4 FOOT		
1 LAMP @	45 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS
79 2 LAMP @	92 W/FIXT =	7,268 WATTS	58 2 LAMP @	58 W/FIXT =	4,582 WATTS
46 3 LAMP @	137 W/FIXT =	6,302 WATTS	46 3 LAMP @	87 W/FIXT =	4,002 WATTS
60 4 LAMP @	184 W/FIXT =	11,040 WATTS	60 4 LAMP @	118 W/FIXT =	7,080 WATTS

8 FOOT	8 FOOT
2 LAMP @ 180 W/FIXT = 0 WATTS	0.2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION	107,496 KWH/YR	ECO ENERGY CONSUMPTION	68,420 KWH/YR
	386,987 MJ/YR		246,313 MJ/YR

Baseline Demand	24.61 KW	ECO DEMAND	15.66 KW
BASELINE DEMAND	24.61 KW	ECO DEMAND	15.66 KW

NET ENERGY SAVINGS	140,674 MJ/YR	NET DEMAND SAVINGS	\$1,265 /YR
NET ENERGY SAVINGS	133 MBTUYR	NET DOLLAR SAVINGS	\$2,091 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6911
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 34 2 LAMP U 92 W/FIXT = 3,128 WATTS 34 2 LAMP U @ 58 W/FIXT = 1,972 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 28 W/FIXT = 0 WATTS
 2 LAMP @ 92 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 4 LAMP @ 184 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 27,326 KWH/YR ECO ENERGY CONSUMPTION 17,227 KWH/YR
 98,374 MJ/YR 62,019 MJ/YR
 BASELINE DEMAND 3.13 KW ECO DEMAND 1.97 KW

NET ENERGY SAVINGS 36,356 MJ/YR NET DEMAND SAVINGS \$163 /YR
 NET ENERGY SAVINGS 34 MBTU/YR NET DOLLAR SAVINGS \$377 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6911-BARRACKS

AREA: STAIRWELLS

LAMP USE:

HOURS/DAY 24

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 M.J/YR
26 MBTU/YR

NET DEMAND SAVINGS

\$97 /YR
\$258 /YR

NET DOLLAR SAVINGS

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=====
Estimate:      Bldg. 6911      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					83.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		30.21	\$0	\$830	\$0	\$0	\$830
0207082121	DEMO. 2X4' FLUOR FIXTURES					114.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		55.29	\$0	\$1,522	\$0	\$0	\$1,522
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					30.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		9.60	\$0	\$264	\$0	\$0	\$264
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					12.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.10	\$0	\$85	\$0	\$0	\$85
U02 SITEWORK		99	\$0	\$2,701	\$0	\$0	\$2,701

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE				0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS				83.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	116.53	\$7,304	\$3,196	\$0	\$0	\$10,500
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS				0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS				54.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	86.40	\$4,860	\$2,376	\$0	\$0	\$7,236
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS				60.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	102.00	\$5,640	\$2,820	\$0	\$0	\$8,460
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS				0.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR				0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8				30.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	42.00	\$2,670	\$1,155	\$0	\$0	\$3,825
1661388040	COMP FLUOR LAMP, 26 W QUAD				12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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=====
Line #      Description
-----
            Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      353    $20,600    $9,712         $0         $0    $30,312

ESTIMATE TOTAL      452    $20,600    $12,413         $0         $0    $33,013

SALES TAX           5.00%     $1,030
MATL MARKUP        -40.00%    ($8,240)
LABOR MARKUP       -13.40%         ($1,663)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $13,390    $10,750         $0         $0    $24,140
CONTINGENCY          10.00%         $2,414
BOND                  2.50%         $603
PROFIT               10.00%         $2,414

JOB TOTAL                                     $29,571

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=====
Estimate:      Bldg. 6911      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      99      $0      $2,701      $0      $0      $2,701
U16 ELECTRICAL   353    $20,600    $9,712      $0      $0    $30,312
TOTAL            452    $20,600   $12,413      $0      $0    $33,013

SALES TAX         5.00%    $1,030
MATL MARKUP       -40.00%   ($8,240)
LABOR MARKUP      -13.40%   ($1,663)
EQUIPT MARKUP     0.00%
SUB MARKUP        0.00%

TOTAL BEFORE CONTINGENC $13,390   $10,750      $0      $0    $24,140
CONTINGENCY       10.00%
BOND              2.50%
PROFIT            10.00%

JOB TOTAL                                $29,571

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6912
AREA: BARRACKS
AREA USE: 8
HOURS/DAY: 7
DAYS/WEEK: 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS
6 2 LAMP @ 92 W/FIXT = 552 WATTS
3 LAMP @ 137 W/FIXT = 0 WATTS
4 LAMP @ 184 W/FIXT = 0 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
6 2 LAMP @ 58 W/FIXT = 348 WATTS
0 3 LAMP @ 87 W/FIXT = 0 WATTS
0 4 LAMP @ 118 W/FIXT = 0 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 1,607 KWH/YR ECO ENERGY CONSUMPTION 1,013 KWH/YR
5,787 MJ/YR 3,648 MJ/YR

BASELINE DEMAND 0.55 KW ECO DEMAND 0.35 KW

NET ENERGY SAVINGS 2,139 MJ/YR NET DEMAND SAVINGS \$29 /YR
NET ENERGY SAVINGS 2 MBTU/YR NET DOLLAR SAVINGS \$41 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6912
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS
 34 2 LAMP @ 92 W/FIXT = 3,128 WATTS
 50 3 LAMP @ 137 W/FIXT = 6,850 WATTS
 40 4 LAMP @ 184 W/FIXT = 7,360 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 34 2 LAMP @ 58 W/FIXT = 1,972 WATTS
 50 3 LAMP @ 87 W/FIXT = 4,350 WATTS
 40 4 LAMP @ 118 W/FIXT = 4,720 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 75,732 KWH/YR ECO ENERGY CONSUMPTION 48,231 KWH/YR
 272,637 MJ/YR 173,633 MJ/YR
 BASELINE DEMAND 17.34 KW ECO DEMAND 11.04 KW

NET ENERGY SAVINGS 99,003 MJ/YR NET DEMAND SAVINGS \$890 /YR
 NET ENERGY SAVINGS 94 MBTU/YR NET DOLLAR SAVINGS \$1,471 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6912-BARRACKS
AREA: STAIRWELLS & HALLWAYS

LAMP USE: 24
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS =	0 WATTS	0 LAMPS @ 13 WATTS =	0 WATTS
LAMPS @ 60 WATTS =	0 WATTS		
16 LAMPS @ 75 WATTS =	1200 WATTS	16 LAMPS @ 18 WATTS =	288 WATTS
LAMPS @ 90 WATTS =	0 WATTS	0 LAMPS @ 26 WATTS =	0 WATTS
LAMPS @ 135 WATTS =	0 WATTS		

COMPACT FLUORESCENT REPLACEMENT

BASELINE ENERGY CONSUMPTION	10,483 KWH	ECO ENERGY CONSUMPTION	288 KWH
	37,740 MJ		1,037 MJ
BASELINE DEMAND	1.20 KW	ECO DEMAND	0.29 KW

NET ENERGY SAVINGS	36,703 MJ/YR	NET DEMAND SAVINGS	\$128 /YR
NET ENERGY SAVINGS	35 MBTU/YR	NET DOLLAR SAVINGS	\$344 /YR

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Estimate:      Bldg. 6912          Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study    Bid Date:
Location:       Ft. Campbell      Job #:
Sq. footage:    City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					70.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00		10.00
Totals	25.48	\$0	\$700	\$0	\$0		\$700
0207082121	DEMO. 2X4' FLUOR FIXTURES					90.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	43.65	\$0	\$1,202	\$0	\$0		\$1,202
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					6.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00		8.80
Totals	1.92	\$0	\$53	\$0	\$0		\$53
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					16.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	4.13	\$0	\$114	\$0	\$0		\$114
U02 SITEWORK	76	\$0	\$2,069	\$0	\$0		\$2,069

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=====
Line #      Description
-----
Manhours   Matl      Labor    Equipment   Sub      Total
=====

1661307777  L.E.D. EXIT SIGN
SINGLE FACE                                0.00 EA
Unit values    1.00    185.00    27.50    0.00    0.00    212.50
Totals         0.00      $0        $0        $0        $0        $0

1661309801  REC FLUOR TROFFER 2X2' W 2 31W T8-U
ACRYLIC LENS                                36.00 EA
Unit values    1.40    88.00    38.50    0.00    0.00    126.50
Totals        50.54   $3,168   $1,386    $0        $0    $4,554

1661309802  REC FLUOR TROFFER 2X4' W 2 32W T8
ACRYLIC LENS                                0.00 EA
Unit values    1.51    84.00    41.50    0.00    0.00    125.50
Totals         0.00      $0        $0        $0        $0        $0

1661309803  REC FLUOR TROFFER 2X4' W 3 32W T8
ACRYLIC LENS                                50.00 EA
Unit values    1.60    90.00    44.00    0.00    0.00    134.00
Totals        80.00   $4,500   $2,200    $0        $0    $6,700

1661309804  REC FLUOR TROFFER 2X4' W 4 32W T8
ACRYLIC LENS                                40.00 EA
Unit values    1.70    94.00    47.00    0.00    0.00    141.00
Totals        68.00   $3,760   $1,880    $0        $0    $5,640

1661309807  REC FLUOR TROFFER 1X4' W 2 32W T8
ACRYLIC LENS                                34.00 EA
Unit values    1.14    73.00    31.50    0.00    0.00    104.50
Totals        38.76   $2,482   $1,071    $0        $0    $3,553

1661309909  SUR FLUOR 1X4' W 2 32W T8
Unit values    1.14    86.00    31.50    0.00    0.00    117.50
Totals         0.00      $0        $0        $0        $0        $0

1661309910  INDUSTRIAL FLUOR 1X4' W 2 32W T8
TWO-PIECE REFLECTOR                        0.00 EA
Unit values    1.14    90.00    31.50    0.00    0.00    121.50
Totals         0.00      $0        $0        $0        $0        $0

1661309919  PEND FLUOR 1X4' W 2 32W T8
Unit values    1.40    89.00    38.50    0.00    6.00 EA  127.50
Totals         8.40   $534    $231    $0        $0    $765

1661388040  COMP FLUOR LAMP, 26 W QUAD
Unit values    0.50    10.50    13.75    0.00    12.00 EA  24.25

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	4.00 EA 0.00	53.00
Totals	4.00	\$102	\$110	\$0	\$0	\$212

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=====
Line #      Description
-----
      Manhours   Matl     Labor   Equipment   Sub     Total
=====
U16 ELECTRICAL      256    $14,672    $7,043         $0         $0    $21,715

ESTIMATE TOTAL      332    $14,672    $9,112         $0         $0    $23,784

SALES TAX           5.00%         $734
MATL MARKUP        -40.00%    ($5,869)
LABOR MARKUP       -13.40%         ($1,221)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $9,537    $7,891         $0         $0    $17,428
CONTINGENCY           10.00%         $1,743
BOND                   2.50%         $436
PROFIT                 10.00%         $1,743

JOB TOTAL                                     $21,349

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=====
Estimate:      Bldg. 6912      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:     Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      76      $0      $2,069      $0      $0      $2,069
U16 ELECTRICAL    256    $14,672    $7,043      $0      $0    $21,715
TOTAL             332    $14,672    $9,112      $0      $0    $23,784

SALES TAX          5.00%      $734
MATL MARKUP       -40.00%    ($5,869)
LABOR MARKUP      -13.40%    ($1,221)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%

TOTAL BEFORE CONTINGENC  $9,537    $7,891      $0      $0    $17,428
CONTINGENCY         10.00%      $1,743
BOND                 2.50%      $436
PROFIT              10.00%      $1,743
JOB TOTAL                                $21,349

```


FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6917
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS	2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	2 LAMP @	92 W/FIXT =	0 WATTS		0 2 LAMP @	58 W/FIXT =	0 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS		0 3 LAMP @	87 W/FIXT =	0 WATTS
	8 4 LAMP @	184 W/FIXT =	1,472 WATTS		8 4 LAMP @	118 W/FIXT =	944 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	4,286 KWH/YR	ECO ENERGY CONSUMPTION	2,749 KWH/YR
BASELINE DEMAND	15,431 MJ/YR	ECO DEMAND	9,896 MJ/YR
	1.47 KW		0.94 KW

NET ENERGY SAVINGS 5,535 MJ/YR
 NET ENERGY SAVINGS 5 MBTU/YR
 NET DEMAND SAVINGS \$75 /YR
 NET DOLLAR SAVINGS \$107 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6917
 AREA: BARRACKS
 AREA USE:
 HOURS/DAY 12
 DAYS/WEEK 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	28 2 LAMP U	92 W/FIXT =	2,576 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS
	40 2 LAMP @	92 W/FIXT =	3,680 WATTS
	16 3 LAMP @	137 W/FIXT =	2,192 WATTS
	51 4 LAMP @	184 W/FIXT =	9,384 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	28 2 LAMP U @	58 W/FIXT =	1,624 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	40 2 LAMP @	58 W/FIXT =	2,320 WATTS
	16 3 LAMP @	87 W/FIXT =	1,392 WATTS
	51 4 LAMP @	118 W/FIXT =	6,018 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	77,890 KWH/YR	ECO ENERGY CONSUMPTION	49,594 KWH/YR
BASELINE DEMAND	280,405 MJ/YR	ECO DEMAND	178,539 MJ/YR
	17.83 KW		11.35 KW

NET ENERGY SAVINGS	101,865 MJ/YR	NET DEMAND SAVINGS	\$916 /YR
NET ENERGY SAVINGS	97 MBTU/YR	NET DOLLAR SAVINGS	\$1,514 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6917
 AREA: BARRACKS
 AREA USE:
 HOURS/DAY: 24
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 37 2 LAMP U 92 W/FIXT = 3,404 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS
 50 2 LAMP @ 92 W/FIXT = 4,600 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS
 4 4 LAMP @ 184 W/FIXT = 736 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 37 2 LAMP U @ 58 W/FIXT = 2,146 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 50 2 LAMP @ 58 W/FIXT = 2,900 WATTS
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 4 4 LAMP @ 118 W/FIXT = 472 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 76,353 KWH/YR ECO ENERGY CONSUMPTION 48,205 KWH/YR
 274,870 MJ/YR 173,539 MJ/YR
 BASELINE DEMAND 8.74 KW ECO DEMAND 5.52 KW

NET ENERGY SAVINGS 101,331 MJ/YR NET DEMAND SAVINGS \$455 /YR
 NET ENERGY SAVINGS 96 MBTU/YR NET DOLLAR SAVINGS \$1,050 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6917-BARRACKS

AREA: STAIRWELLS

LAMP USE: 24

DAYS/WEEK: 7

PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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=====
Estimate:      Bldg. 6917      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					127.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	46.23	\$0	\$1,270	\$0	\$0	\$1,270	
0207082121	DEMO. 2X4' FLUOR FIXTURES					107.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	51.90	\$0	\$1,428	\$0	\$0	\$1,428	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	0.00	\$0	\$0	\$0	\$0	\$0	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					12.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	3.10	\$0	\$85	\$0	\$0	\$85	
U02 SITEWORK	102	\$0	\$2,783	\$0	\$0	\$2,783	

Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE				0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS				75.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	105.30	\$6,600	\$2,888	\$0	\$0	\$9,488
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS				28.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	42.28	\$2,352	\$1,162	\$0	\$0	\$3,514
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS				16.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	25.60	\$1,440	\$704	\$0	\$0	\$2,144
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS				63.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	107.10	\$5,922	\$2,961	\$0	\$0	\$8,883
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS				52.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	59.28	\$3,796	\$1,638	\$0	\$0	\$5,434
1661309909	SUR FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR				0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD				12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      346    $20,236    $9,518           $0      $0    $29,754

ESTIMATE TOTAL      448    $20,236    $12,301           $0      $0    $32,537

SALES TAX           5.00%     $1,012
MATL MARKUP        -40.00%    ($8,094)
LABOR MARKUP       -13.40%           ($1,648)
EQUIPT MARKUP       0.00%           $0
SUB MARKUP          0.00%           $0

TOTAL BEFORE CONTINGENC $13,153    $10,653           $0      $0    $23,806
CONTINGENCY          10.00%           $2,381
BOND                  2.50%           $595
PROFIT               10.00%           $2,381

JOB TOTAL                                $29,162
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=====
Estimate:      Bldg. 6917      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      102      $0      $2,783      $0      $0      $2,783
U16 ELECTRICAL    346    $20,236    $9,518      $0      $0    $29,754
TOTAL              448    $20,236    $12,301      $0      $0    $32,537

SALES TAX          5.00%    $1,012
MATL MARKUP       -40.00%   ($8,094)
LABOR MARKUP      -13.40%   ($1,648)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%

TOTAL BEFORE CONTINGENC $13,153    $10,653      $0      $0    $23,806
CONTINGENCY        10.00%           $2,381
BOND                2.50%           $595
PROFIT              10.00%          $2,381
JOB TOTAL                                $29,162

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6918
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0 WATTS
	5 2 LAMP @	92 W/FIXT =	460 WATTS	5 2 LAMP @	58 W/FIXT =	290 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0 WATTS
	5 4 LAMP @	184 W/FIXT =	920 WATTS	5 4 LAMP @	118 W/FIXT =	590 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0.2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	0.1 LAMP @	29 W/FIXT =	0 WATTS
	5 2 LAMP @	58 W/FIXT =	290 WATTS
	0.3 LAMP @	87 W/FIXT =	0 WATTS
	5 4 LAMP @	118 W/FIXT =	590 WATTS
8 FOOT	0.2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	4,019 KWH/YR	ECO ENERGY CONSUMPTION	2,563 KWH/YR
	14,467 MJ/YR		9,225 MJ/YR
BASELINE DEMAND	1.38 KW	ECO DEMAND	0.88 KW

NET ENERGY SAVINGS	5,242 MJ/YR	NET DEMAND SAVINGS	\$71 /YR
NET ENERGY SAVINGS	5 MBTU/YR	NET DOLLAR SAVINGS	\$101 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6918
AREA: BARRACKS
AREA USE: _____
HOURS/DAY: 12
DAYS/WEEK: 7
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
2 LAMP U	92 W/FIXT = 0 WATTS	2 LAMP U	0 2 LAMP U @ 58 W/FIXT = 0 WATTS	2 LAMP @	0 2 LAMP @ 125 W/FIXT = 0 WATTS
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS		
41 2 LAMP @	92 W/FIXT = 3,772 WATTS	41 2 LAMP @	58 W/FIXT = 2,378 WATTS		
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS		
37 4 LAMP @	184 W/FIXT = 6,808 WATTS	37 4 LAMP @	118 W/FIXT = 4,366 WATTS		

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
46,213 KWH/YR	166,368 MJ/YR	29,458 KWH/YR	106,048 MJ/YR
10.58 KW	6.74 KW		

NET ENERGY SAVINGS		NET DEMAND SAVINGS	
60,320 MJ/YR	57 MBTU/YR	\$542 /YR	\$896 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6918
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	50 2 LAMP U	92 W/FIXT =	4,600 WATTS	50 2 LAMP U @	58 W/FIXT =	2,900 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS
	40 2 LAMP @	92 W/FIXT =	3,680 WATTS	40 2 LAMP @	58 W/FIXT =	2,320 WATTS
	11 3 LAMP @	137 W/FIXT =	1,507 WATTS	11 3 LAMP @	87 W/FIXT =	957 WATTS
	4 4 LAMP @	184 W/FIXT =	736 WATTS	4 4 LAMP @	118 W/FIXT =	472 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASLINE ENERGY CONSUMPTION	91,929 KWH/YR	ECO ENERGY CONSUMPTION	58,086 KWH/YR
	330,944 MJ/YR		209,108 MJ/YR
BASLINE DEMAND	10.52 KW	ECO DEMAND	6.65 KW

NET ENERGY SAVINGS	121,836 MJ/YR	NET DEMAND SAVINGS	\$548 /YR
NET ENERGY SAVINGS	115 MBTU/YR	NET DOLLAR SAVINGS	\$1,263 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6918-BARRACKS
AREA: RESTROOMS

LAMP USE: 8
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
9 LAMPS @	75	WATTS =	675	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
9 LAMPS @	18	WATTS =	162	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

1,966 KWH
7,076 MJ

ECO ENERGY CONSUMPTION

162 KWH
583 MJ

BASELINE DEMAND

0.68 KW

ECO DEMAND

0.16 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

6,493 MJ/YR
6 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$73 /YR
\$111 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6918-BARRACKS
AREA: STAIRWELLS

LAMP USE:
HOURS/DAY 24
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52	WATTS = 0	WATTS	0	WATTS	0
LAMPS @ 60	WATTS = 0	WATTS	0	WATTS	0
15 LAMPS @ 75	WATTS = 1125	WATTS	15	WATTS = 270	WATTS
LAMPS @ 90	WATTS = 0	WATTS	0	WATTS = 0	WATTS
LAMPS @ 135	WATTS = 0	WATTS	0	WATTS = 0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13	WATTS = 0	WATTS	0	WATTS	0
15 LAMPS @ 18	WATTS = 270	WATTS	15	WATTS = 270	WATTS
0 LAMPS @ 26	WATTS = 0	WATTS	0	WATTS = 0	WATTS

BASELINE ENERGY CONSUMPTION

9,828 KWH
35,381 MJ

ECO ENERGY CONSUMPTION

270 KWH
972 MJ

BASELINE DEMAND

1.13 KW

ECO DEMAND

0.27 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

34,409 MJ/YR
33 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$121 /YR
\$323 /YR

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=====
Estimate:      Bldg. 6918           Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study      Bid Date:
Location:      Ft. Campbell         Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					116.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	42.22	\$0	\$1,160	\$0	\$0	\$1,160	
0207082121	DEMO. 2X4' FLUOR FIXTURES					77.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	37.35	\$0	\$1,028	\$0	\$0	\$1,028	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	0.00	\$0	\$0	\$0	\$0	\$0	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					24.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	6.19	\$0	\$170	\$0	\$0	\$170	
U02 SITEWORK	86	\$0	\$2,358	\$0	\$0	\$2,358	

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					50.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	70.20	\$4,400	\$1,925	\$0	\$0	\$6,325
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					20.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	30.20	\$1,680	\$830	\$0	\$0	\$2,510
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					11.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	17.60	\$990	\$484	\$0	\$0	\$1,474
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					46.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	78.20	\$4,324	\$2,162	\$0	\$0	\$6,486
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					66.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	75.24	\$4,818	\$2,079	\$0	\$0	\$6,897
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	12.00 EA 0.00	53.00
Totals	12.00	\$306	\$330	\$0	\$0	\$636

```
=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      290    $16,644    $7,975           $0      $0    $24,619

ESTIMATE TOTAL      376    $16,644    $10,333           $0      $0    $26,977

SALES TAX           5.00%      $832
MATL MARKUP        -40.00%    ($6,658)
LABOR MARKUP       -13.40%           ($1,385)
EQUIPT MARKUP       0.00%           $0
SUB MARKUP          0.00%           $0

TOTAL BEFORE CONTINGENC $10,819    $8,948           $0      $0    $19,767
CONTINGENCY          10.00%           $1,977
BOND                 2.50%           $494
PROFIT               10.00%           $1,977

JOB TOTAL                                $24,215
=====
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=====
Estimate:      Bldg. 6918      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      86      $0      $2,358      $0      $0      $2,358
U16 ELECTRICAL    290    $16,644    $7,975      $0      $0    $24,619
TOTAL              376    $16,644    $10,333     $0      $0    $26,977

SALES TAX          5.00%      $832
MATL MARKUP        -40.00%    ($6,658)
LABOR MARKUP        -13.40%    ($1,385)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $10,819    $8,948     $0      $0    $19,767
CONTINGENCY          10.00%
BOND                 2.50%
PROFIT               10.00%

JOB TOTAL                                $24,215

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6919		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	8	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS
	2 LAMP @	92 W/FIXT =	0 WATTS
	4 3 LAMP @	137 W/FIXT =	548 WATTS
	9 4 LAMP @	184 W/FIXT =	1,656 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	0 2 LAMP @	58 W/FIXT =	0 WATTS
	4 3 LAMP @	87 W/FIXT =	348 WATTS
	9 4 LAMP @	118 W/FIXT =	1,062 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	6,418 KWH/YR	ECO ENERGY CONSUMPTION	4,106 KWH/YR
	23,105 MJ/YR		14,781 MJ/YR
BASELINE DEMAND	2.20 KW	ECO DEMAND	1.41 KW

NET ENERGY SAVINGS	8,324 MJ/YR	NET DEMAND SAVINGS	\$112 /YR
NET ENERGY SAVINGS	8 MBTU/YR	NET DOLLAR SAVINGS	\$181 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6919
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 2 LAMP U 92 W/FIXT = 0 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS
 52 2 LAMP @ 92 W/FIXT = 4,784 WATTS
 36 3 LAMP @ 137 W/FIXT = 4,932 WATTS
 42 4 LAMP @ 184 W/FIXT = 7,728 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 52 2 LAMP @ 58 W/FIXT = 3,016 WATTS
 36 3 LAMP @ 87 W/FIXT = 3,132 WATTS
 42 4 LAMP @ 118 W/FIXT = 4,956 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 76,195 KWH/YR
 ECO ENERGY CONSUMPTION 48,502 KWH/YR

BASELINE DEMAND 17.44 KW
 ECO DEMAND 11.10 KW

NET ENERGY SAVINGS 99,695 MJ/YR
 NET ENERGY SAVINGS 94 MBTU/YR

NET DEMAND SAVINGS \$896 /YR
 NET DOLLAR SAVINGS \$1,482 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6919
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 35 2 LAMP U 92 W/FIXT = 3,220 WATTS 35 2 LAMP U @ 58 W/FIXT = 2,030 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 28 W/FIXT = 0 WATTS
 50 2 LAMP @ 92 W/FIXT = 4,600 WATTS 50 2 LAMP @ 58 W/FIXT = 2,900 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 6 4 LAMP @ 184 W/FIXT = 1,104 WATTS 6 4 LAMP @ 118 W/FIXT = 708 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 77,960 KWH/YR ECO ENERGY CONSUMPTION 49,254 KWH/YR
 280,656 MJ/YR 177,313 MJ/YR
 BASELINE DEMAND 8.92 KW ECO DEMAND 5.64 KW

NET ENERGY SAVINGS 103,343 MJ/YR
 NET ENERGY SAVINGS 98 MBTU/YR

NET DEMAND SAVINGS \$465 /YR
 NET DOLLAR SAVINGS \$1,071 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6919-BARRACKS
 AREA: DINING AREA
 LAMP USE: 12
 HOURS/DAY 7
 DAYS/WEEK 1 (1-YES, 2-NO)
 PEAK USE

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
 LAMPS @ 60 WATTS = 0 WATTS
 24 LAMPS @ 75 WATTS = 1800 WATTS
 LAMPS @ 90 WATTS = 0 WATTS
 LAMPS @ 135 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13 WATTS = 0 WATTS
 24 LAMPS @ 18 WATTS = 432 WATTS
 0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
 28,305 MJ

ECO ENERGY CONSUMPTION

432 KWH
 1,555 MJ
 0.43 KW

BASELINE DEMAND

1.80 KW

ECO DEMAND

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

26,749 MJ/YR
 25 MBTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$193 /YR
 \$350 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6919-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	135	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

27,527 MJ/YR
26 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$97 /YR
\$258 /YR


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=====
Estimate:      Bldg. 6919          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:      Ft. Campbell        Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					97.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		35.31	\$0	\$970	\$0	\$0	\$970
0207082121	DEMO. 2X4' FLUOR FIXTURES					97.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		47.05	\$0	\$1,295	\$0	\$0	\$1,295
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					40.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		12.80	\$0	\$352	\$0	\$0	\$352
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					36.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		9.29	\$0	\$256	\$0	\$0	\$256
U02 SITEWORK		105	\$0	\$2,873	\$0	\$0	\$2,873

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661308803	COMP FLUOR, 9" ROUND REC, 2 26W QT OPEN REFLECTOR					24.00 EA
Unit values	2.29	0.00	63.00	0.00	0.00	63.00
Totals	54.96	\$0	\$1,512	\$0	\$0	\$1,512
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					45.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	63.18	\$3,960	\$1,733	\$0	\$0	\$5,693
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					40.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	64.00	\$3,600	\$1,760	\$0	\$0	\$5,360
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					57.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	96.90	\$5,358	\$2,679	\$0	\$0	\$8,037
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					52.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	59.28	\$3,796	\$1,638	\$0	\$0	\$5,434
1661309909	SUR FLUOR 1X4' W 2 32W T8					40.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	45.60	\$3,440	\$1,260	\$0	\$0	\$4,700
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					
Unit values	0.50	10.50	13.75	0.00	12.00 EA	24.25
Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

```
=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      390    $20,280    $10,747         $0        $0    $31,027

ESTIMATE TOTAL      495    $20,280    $13,620         $0        $0    $33,900

SALES TAX           5.00%    $1,014
MATL MARKUP        -40.00%   ($8,112)
LABOR MARKUP       -13.40%   ($1,825)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $13,182    $11,795         $0        $0    $24,977
CONTINGENCY          10.00%                $2,498
BOND                  2.50%                $624
PROFIT                10.00%                $2,498

JOB TOTAL                                $30,597
=====
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=====
Estimate:      Bldg. 6919      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      105      $0      $2,873      $0      $0      $2,873
U16 ELECTRICAL    390     $20,280     $10,747      $0      $0     $31,027
TOTAL              495     $20,280     $13,620      $0      $0     $33,900

SALES TAX          5.00%      $1,014
MATL MARKUP        -40.00%    ($8,112)
LABOR MARKUP        -13.40%    ($1,825)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $13,182  $11,795      $0      $0     $24,977
CONTINGENCY         10.00%                $2,498
BOND                 2.50%                $624
PROFIT               10.00%                $2,498
JOB TOTAL                                $30,597

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6920
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
2 LAMP U	92 W/FIXT = 0 WATTS	2 LAMP U	0 WATTS	2 LAMP U	0 WATTS
1 LAMP @	45 W/FIXT = 0 WATTS	1 LAMP @	0 WATTS	1 LAMP @	0 WATTS
12 2 LAMP @	92 W/FIXT = 1,104 WATTS	12 2 LAMP @	1,104 WATTS	12 2 LAMP @	1,104 WATTS
3 LAMP @	137 W/FIXT = 0 WATTS	3 LAMP @	0 WATTS	3 LAMP @	0 WATTS
5 4 LAMP @	184 W/FIXT = 920 WATTS	5 4 LAMP @	920 WATTS	5 4 LAMP @	920 WATTS
2 LAMP @	180 W/FIXT = 0 WATTS	2 LAMP @	0 WATTS	2 LAMP @	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
0 2 LAMP U @	58 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS
		12 2 LAMP @	58 W/FIXT = 696 WATTS		
		0 3 LAMP @	87 W/FIXT = 0 WATTS		
		5 4 LAMP @	118 W/FIXT = 590 WATTS		

BASELINE ENERGY CONSUMPTION	5,894 KWH/YR	ECO ENERGY CONSUMPTION	3,745 KWH/YR
	21,218 MJ/YR		13,481 MJ/YR
BASELINE DEMAND	2.02 KW	ECO DEMAND	1.29 KW

NET ENERGY SAVINGS	7,737 MJ/YR	NET DEMAND SAVINGS	\$104 /YR
NET ENERGY SAVINGS	7 MBTU/YR	NET DOLLAR SAVINGS	\$150 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6920
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS
 4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS
 36 2 LAMP @ 92 W/FIXT = 3,312 WATTS
 40 3 LAMP @ 137 W/FIXT = 5,480 WATTS
 25 4 LAMP @ 184 W/FIXT = 4,600 WATTS
 8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS
 4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 36 2 LAMP @ 58 W/FIXT = 2,088 WATTS
 40 3 LAMP @ 87 W/FIXT = 3,480 WATTS
 25 4 LAMP @ 118 W/FIXT = 2,950 WATTS
 8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 58,496 KWH/YR ECO ENERGY CONSUMPTION 37,207 KWH/YR
 210,587 MJ/YR 133,944 MJ/YR
 BASELINE DEMAND 13.39 KW ECO DEMAND 8.52 KW

NET ENERGY SAVINGS 76,643 MJ/YR NET DEMAND SAVINGS \$689 /YR
 NET ENERGY SAVINGS 73 MBTU/YR NET DOLLAR SAVINGS \$1,139 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6920		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	ELECTRIC COSTS:	\$0.0211 PER KWH
DAYS/WEEK	7	ENERGY CHARGE	\$11.78 PER KW
		DEMAND CHARGE	
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	47 2 LAMP U	92 W/FIXT =	4,324 WATTS	47 2 LAMP U @	58 W/FIXT =	2,726 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS
	40 2 LAMP @	92 W/FIXT =	3,680 WATTS	40 2 LAMP @	58 W/FIXT =	2,320 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0 WATTS
	4 LAMP @	184 W/FIXT =	0 WATTS	0 4 LAMP @	118 W/FIXT =	0 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	69,923 KWH/YR	ECO ENERGY CONSUMPTION	44,082 KWH/YR
	251,723 MJ/YR		158,695 MJ/YR
BASELINE DEMAND	8.00 KW	ECO DEMAND	5.05 KW

NET ENERGY SAVINGS	93,028 MJ/YR	NET DEMAND SAVINGS	\$418 /YR
NET ENERGY SAVINGS	88 MBTU/YR	NET DOLLAR SAVINGS	\$984 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6920-BARRACKS
AREA: STAIRWELLS & HALLWAYS

LAMP USE: 24
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS	
LAMPS @	60	WATTS =	0	WATTS	
19 LAMPS @	75	WATTS =	1425	WATTS	
LAMPS @	90	WATTS =	0	WATTS	
LAMPS @	135	WATTS =	0	WATTS	

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS	
19 LAMPS @	18	WATTS =	342	WATTS	
0 LAMPS @	26	WATTS =	0	WATTS	

BASELINE ENERGY CONSUMPTION

12,449 KWH
44,816 MJ

ECO ENERGY CONSUMPTION

342 KWH
1,231 MJ

BASELINE DEMAND

1.43 KW

ECO DEMAND

0.34 KW

NET ENERGY SAVINGS

43,584 MJ/YR

NET DEMAND SAVINGS

\$153 /YR

NET ENERGY SAVINGS

41 MBTU/YR

NET DOLLAR SAVINGS

\$409 /YR

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=====
Estimate:      Bldg. 6920      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					115.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		41.86	\$0	\$1,150	\$0	\$0	\$1,150
0207082121	DEMO. 2X4' FLUOR FIXTURES					78.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		37.83	\$0	\$1,041	\$0	\$0	\$1,041
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					12.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		3.84	\$0	\$106	\$0	\$0	\$106
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					19.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.90	\$0	\$135	\$0	\$0	\$135
U02 SITEWORK		89	\$0	\$2,432	\$0	\$0	\$2,432

=====						
Line #	Description					
		Manhours	Matl	Labor	Equipment	Sub Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values		1.00	185.00	27.50	0.00	0.00 212.50
Totals		0.00	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					47.00 EA
Unit values		1.40	88.00	38.50	0.00	0.00 126.50
Totals		65.99	\$4,136	\$1,810	\$0	\$0 \$5,946
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					8.00 EA
Unit values		1.51	84.00	41.50	0.00	0.00 125.50
Totals		12.08	\$672	\$332	\$0	\$0 \$1,004
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					40.00 EA
Unit values		1.60	90.00	44.00	0.00	0.00 134.00
Totals		64.00	\$3,600	\$1,760	\$0	\$0 \$5,360
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					30.00 EA
Unit values		1.70	94.00	47.00	0.00	0.00 141.00
Totals		51.00	\$2,820	\$1,410	\$0	\$0 \$4,230
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					68.00 EA
Unit values		1.14	73.00	31.50	0.00	0.00 104.50
Totals		77.52	\$4,964	\$2,142	\$0	\$0 \$7,106
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values		1.14	86.00	31.50	0.00	0.00 117.50
Totals		0.00	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					6.00 EA
Unit values		1.14	90.00	31.50	0.00	0.00 121.50
Totals		6.84	\$540	\$189	\$0	\$0 \$729
1661309919	PEND FLUOR 1X4' W 2 32W T8					6.00 EA
Unit values		1.40	89.00	38.50	0.00	0.00 127.50
Totals		8.40	\$534	\$231	\$0	\$0 \$765
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values		0.50	10.50	13.75	0.00	0.00 24.25

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	7.00 EA 0.00	53.00
Totals	7.00	\$179	\$193	\$0	\$0	\$372

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=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      299    $17,571    $8,232         $0        $0    $25,803

ESTIMATE TOTAL      388    $17,571    $10,664         $0        $0    $28,235

SALES TAX           5.00%      $879
MATL MARKUP        -40.00%    ($7,028)
LABOR MARKUP       -13.40%    ($1,429)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%

TOTAL BEFORE CONTINGENC $11,421    $9,235         $0        $0    $20,656
CONTINGENCY         10.00%      $2,066
BOND                2.50%      $516
PROFIT              10.00%      $2,066

JOB TOTAL                                     $25,304
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Estimate:      Bldg. 6920      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:      Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      89      $0      $2,432      $0      $0      $2,432
U16 ELECTRICAL   299    $17,571    $8,232      $0      $0    $25,803
TOTAL            388    $17,571   $10,664      $0      $0    $28,235

SALES TAX         5.00%      $879
MATL MARKUP      -40.00%   ($7,028)
LABOR MARKUP     -13.40%   ($1,429)
EQUIPT MARKUP    0.00%
SUB MARKUP       0.00%

TOTAL BEFORE CONTINGENC $11,421    $9,235      $0      $0    $20,656
CONTINGENCY       10.00%           $2,066
BOND              2.50%           $516
PROFIT            10.00%           $2,066
JOB TOTAL                                     $25,304

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6923
 AREA: BARRACKS
 AREA USE:
 HOURS/DAY 8
 DAYS/WEEK 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS
	22 2 LAMP @	92 W/FIXT =	2,024 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS
	4 LAMP @	184 W/FIXT =	0 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS
2 FOOT	2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	22 2 LAMP @	58 W/FIXT =	1,276 WATTS
	0 3 LAMP @	87 W/FIXT =	0 WATTS
	0 4 LAMP @	118 W/FIXT =	0 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	5,894 KWH/YR	ECO ENERGY CONSUMPTION	3,716 KWH/YR
BASELINE DEMAND	21,218 MJ/YR	ECO DEMAND	13,377 MJ/YR
	2.02 KW		1.28 KW

NET ENERGY SAVINGS	7,841 MJ/YR	NET DEMAND SAVINGS	\$106 /YR
NET ENERGY SAVINGS	7 MBTU/YR	NET DOLLAR SAVINGS	\$152 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6923
 AREA: BARRACKS
 AREA USE: _____
 HOURS/DAY: 12
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS
 25 2 LAMP @ 92 W/FIXT = 2,300 WATTS
 16 3 LAMP @ 137 W/FIXT = 2,192 WATTS
 62 4 LAMP @ 184 W/FIXT = 11,408 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 25 2 LAMP @ 58 W/FIXT = 1,450 WATTS
 16 3 LAMP @ 87 W/FIXT = 1,392 WATTS
 62 4 LAMP @ 118 W/FIXT = 7,316 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 69,451 KWH/YR ECO ENERGY CONSUMPTION 44,370 KWH/YR
 250,024 MJ/YR 159,733 MJ/YR

BASELINE DEMAND 15.90 KW ECO DEMAND 10.16 KW

NET ENERGY SAVINGS 90,292 MJ/YR NET DEMAND SAVINGS \$812 /YR
 NET ENERGY SAVINGS 86 MBTU/YR NET DOLLAR SAVINGS \$1,342 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6923
AREA: BARRACKS
AREA USE: 24
HOURS/DAY 7
DAYS/WEEK
BUILDING VOLTAGE: 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
34 2 LAMP U 92 W/FIXT = 3,128 WATTS

4 FOOT
1 LAMP @ 45 W/FIXT = 0 WATTS
50 2 LAMP @ 92 W/FIXT = 4,600 WATTS
3 LAMP @ 137 W/FIXT = 0 WATTS
5 4 LAMP @ 184 W/FIXT = 920 WATTS

8 FOOT
2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
34 2 LAMP U @ 58 W/FIXT = 1,972 WATTS

4 FOOT
0 1 LAMP @ 29 W/FIXT = 0 WATTS
50 2 LAMP @ 58 W/FIXT = 2,900 WATTS
0 3 LAMP @ 87 W/FIXT = 0 WATTS
5 4 LAMP @ 118 W/FIXT = 590 WATTS

8 FOOT
0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 75,549 KWH/YR ECO ENERGY CONSUMPTION 47,716 KWH/YR
271,976 MJ/YR 171,778 MJ/YR

8.65 KW 5.46 KW

ECO DEMAND

NET ENERGY SAVINGS 100,198 MJ/YR NET DEMAND SAVINGS \$450 /YR
NET ENERGY SAVINGS 95 MBTU/YR NET DOLLAR SAVINGS \$1,039 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6923-BARRACKS

AREA: HALLWAYS

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

24

7

1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
LAMPS @	75	WATTS =	0	WATTS
LAMPS @	90	WATTS =	0	WATTS
4 LAMPS @	100	WATTS =	400	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
0 LAMPS @	18	WATTS =	0	WATTS
4 LAMPS @	26	WATTS =	104	WATTS

BASELINE ENERGY CONSUMPTION

3,494 KWH
12,580 MJ

ECO ENERGY CONSUMPTION

104 KWH
374 MJ
0.10 KW

BASELINE DEMAND

0.40 KW

ECO DEMAND

NET ENERGY SAVINGS

12,205 MJ/YR

NET DEMAND SAVINGS

\$42 /YR

NET ENERGY SAVINGS

12 MBTU/YR

NET DOLLAR SAVINGS

\$114 /YR

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=====
Estimate:      Bldg. 6923      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					113.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	41.13	\$0	\$1,130	\$0	\$0	\$1,130	
0207082121	DEMO. 2X4' FLUOR FIXTURES					87.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	42.20	\$0	\$1,161	\$0	\$0	\$1,161	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					14.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	4.48	\$0	\$123	\$0	\$0	\$123	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					4.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	1.03	\$0	\$28	\$0	\$0	\$28	
U02 SITEWORK	89	\$0	\$2,442	\$0	\$0	\$2,442	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					73.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	102.49	\$6,424	\$2,811	\$0	\$0		\$9,235
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					4.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	6.04	\$336	\$166	\$0	\$0		\$502
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					16.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	25.60	\$1,440	\$704	\$0	\$0		\$2,144
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					67.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	113.90	\$6,298	\$3,149	\$0	\$0		\$9,447
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					40.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	45.60	\$2,920	\$1,260	\$0	\$0		\$4,180
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					14.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00		127.50
Totals	19.60	\$1,246	\$539	\$0	\$0		\$1,785
1661388040	COMP FLUOR LAMP, 26 W QUAD					0.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00		24.25

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	4.00 EA	53.00
Totals	4.00	\$102	\$110	\$0	\$0	\$212

```
=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      318    $18,766    $8,739           $0      $0    $27,505

ESTIMATE TOTAL      407    $18,766    $11,181           $0      $0    $29,947

SALES TAX           5.00%      $938
MATL MARKUP        -40.00%    ($7,506)
LABOR MARKUP       -13.40%           ($1,498)
EQUIPT MARKUP       0.00%           $0
SUB MARKUP          0.00%           $0

TOTAL BEFORE CONTINGENC $12,198    $9,683           $0      $0    $21,881
CONTINGENCY          10.00%           $2,188
BOND                  2.50%           $547
PROFIT               10.00%           $2,188

JOB TOTAL                                $26,804
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=====
Estimate:      Bldg. 6923      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      89      $0      $2,442      $0      $0      $2,442
U16 ELECTRICAL    318    $18,766    $8,739      $0      $0    $27,505
TOTAL             407    $18,766   $11,181      $0      $0    $29,947

SALES TAX          5.00%      $938
MATL MARKUP        -40.00%   ($7,506)
LABOR MARKUP        -13.40%   ($1,498)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $12,198    $9,683      $0      $0    $21,881
CONTINGENCY          10.00%      $2,188
BOND                 2.50%      $547
PROFIT               10.00%      $2,188
JOB TOTAL                                $26,804

```

EBCO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6927
AREA: BARRACKS

<u>ELECTRIC COSTS:</u>	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	<u>\$11.78 PER KW</u>

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT

2 FOOT 0 2 LAMP U @ 58 W/FIXT # 0 WATTS

4 FOOT

0	1 LAMP @	29 W/FIXT =	0 WATTS
0	2 LAMP @	58 W/FIXT =	0 WATTS
0	3 LAMP @	87 W/FIXT =	0 WATTS
2	4 LAMP @	118 W/FIXT =	236 WATTS

8 FOOT

8 FOOT 0.2 LAMP @ 125 W/FXT # 0 WATTS

BASELINE ENERGY CONSUMPTION

1.072	KWH/YR	ECO ENERGY CONSUMPTION	687	KWH/YR

BASELINE DEMAND

3,000	WJ/TK	0.37	KW	ECO DEMAND	0.24	KW	2,474	MJ/TK
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NET ENERGY SAVINGS

1.384 MJYR

NET DEMAND SAVINGS

NET ENERGY SAVINGS

1 MBTU/YR

NET DOLLAR SAVINGS	\$27 /YR
NET DOLLAR SAVINGS	\$13 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6927
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 53 2 LAMP U 92 W/FIXT = 4,876 WATTS 53 2 LAMP U @ 58 W/FIXT = 3,074 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 77 2 LAMP @ 92 W/FIXT = 7,084 WATTS 77 2 LAMP @ 58 W/FIXT = 4,466 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 58 4 LAMP @ 184 W/FIXT = 10,672 WATTS 58 4 LAMP @ 118 W/FIXT = 6,844 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 98,857 KWH/YR ECO ENERGY CONSUMPTION 62,829 KWH/YR
 355,884 MJ/YR 226,186 MJ/YR
 BASELINE DEMAND 22.63 KW ECO DEMAND 14.38 KW

NET ENERGY SAVINGS 129,698 MJ/YR NET DEMAND SAVINGS \$1,166 /YR
 NET ENERGY SAVINGS 123 MBTU/YR NET DOLLAR SAVINGS \$1,928 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6927
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
29 2 LAMP U	92 W/FIXT = 2,568 WATTS	29 2 LAMP U @	58 W/FIXT = 1,682 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
50 2 LAMP @	92 W/FIXT = 4,600 WATTS	50 2 LAMP @	58 W/FIXT = 2,900 WATTS
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS
4 LAMP @	184 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 63,493 KWH/YR ECO ENERGY CONSUMPTION 40,028 KWH/YR
 228,576 MJ/YR 144,102 MJ/YR

BASELINE DEMAND 7.27 KW ECO DEMAND 4.58 KW

NET ENERGY SAVINGS 84,474 MJ/YR NET DEMAND SAVINGS \$380 /YR
 NET ENERGY SAVINGS 80 MBTU/YR NET DOLLAR SAVINGS \$876 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6927-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52	WATTS = 0	WATTS
LAMPS @ 60	WATTS = 0	WATTS
12 LAMPS @ 75	WATTS = 900	WATTS
LAMPS @ 90	WATTS = 0	WATTS
LAMPS @ 100	WATTS = 0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @ 13	WATTS = 0	WATTS
12 LAMPS @ 18	WATTS = 216	WATTS
0 LAMPS @ 26	WATTS = 0	WATTS

BASELINE ENERGY CONSUMPTION

7.862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

27,527 MJ/YR
28 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$97 /YR
\$258 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

BUILDING #: 6927 - BARRACKS

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

INCANDESCENT EXIT SIGNS	FLUORESCENT EXIT SIGNS	REPLACEMENT FIXTURE
# EXIT SIGNS 2	# EXIT SIGNS 0	# EXIT SIGNS 2
WATTAGE 30	WATTAGE 18	WATTAGE 3

BASELINE ENERGY CONSUMPTION	526 KWH/YR	ECO ENERGY CONSUMPTION	53 KWH/YR
	1,892 MJ/YR		189 MJ/YR
BASELINE DEMAND	0.06 KW	ECO DEMAND	0.01 KW

NET ENERGY SAVINGS	1,703 MJ/YR	NET DEMAND SAVINGS	\$8 /YR
NET ENERGY SAVINGS	1.61 MBTU/YR	NET DOLLAR SAVINGS	\$18 /YR

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=====
Estimate:      Bldg. 6927      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					102.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		37.13	\$0	\$1,020	\$0	\$0	\$1,020
0207082121	DEMO. 2X4' FLUOR FIXTURES					94.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		45.59	\$0	\$1,255	\$0	\$0	\$1,255
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					73.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		23.36	\$0	\$642	\$0	\$0	\$642
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					14.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.61	\$0	\$99	\$0	\$0	\$99
U02 SITEWORK		110	\$0	\$3,016	\$0	\$0	\$3,016

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					2.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	2.00	\$370	\$55	\$0	\$0	\$425
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					92.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	129.17	\$8,096	\$3,542	\$0	\$0	\$11,638
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					34.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	51.34	\$2,856	\$1,411	\$0	\$0	\$4,267
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					60.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	102.00	\$5,640	\$2,820	\$0	\$0	\$8,460
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					10.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	11.40	\$730	\$315	\$0	\$0	\$1,045
1661309909	SUR FLUOR 1X4' W 2 32W T8					40.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	45.60	\$3,440	\$1,260	\$0	\$0	\$4,700
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					33.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	46.20	\$2,937	\$1,271	\$0	\$0	\$4,208
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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Line #      Description
-----
      Manhours  Matl    Labor  Equipment    Sub    Total
=====
U16 ELECTRICAL      394    $24,195    $10,839          $0      $0    $35,034

ESTIMATE TOTAL      504    $24,195    $13,855          $0      $0    $38,050

SALES TAX           5.00%    $1,210
MATL MARKUP        -40.00%   ($9,678)
LABOR MARKUP       -13.40%   ($1,857)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $15,727    $11,998          $0      $0    $27,725
CONTINGENCY          10.00%                $2,773
BOND                  2.50%                $693
PROFIT                10.00%                $2,773

JOB TOTAL                                $33,963
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Estimate:      Bldg. 6927      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:   City indx:
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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      110      $0      $3,016      $0      $0      $3,016
U16 ELECTRICAL    394    $24,195    $10,839      $0      $0    $35,034
TOTAL              504    $24,195    $13,855      $0      $0    $38,050

SALES TAX          5.00%    $1,210
MATL MARKUP        -40.00%   ($9,678)
LABOR MARKUP       -13.40%      ($1,857)
EQUIPT MARKUP      0.00%      $0
SUB MARKUP         0.00%      $0

TOTAL BEFORE CONTINGENC $15,727    $11,998      $0      $0    $27,725
CONTINGENCY         10.00%      $2,773
BOND                2.50%      $693
PROFIT              10.00%      $2,773
JOB TOTAL                                $33,963

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6928		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	8	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0 WATTS
	2 LAMP @	92 W/FIXT =	0 WATTS	0.2 LAMP @	58 W/FIXT =	0 WATTS
	8.3 LAMP @	137 W/FIXT =	1,096 WATTS	8.3 LAMP @	87 W/FIXT =	696 WATTS
	4 LAMP @	184 W/FIXT =	0 WATTS	0.4 LAMP @	118 W/FIXT =	0 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	3,192 KWH/YR	ECO ENERGY CONSUMPTION	2,027 KWH/YR
	11,490 MJ/YR		7,296 MJ/YR
BASELINE DEMAND	1.10 KW	ECO DEMAND	0.70 KW

NET ENERGY SAVINGS	4,193 MJ/YR	NET DEMAND SAVINGS	\$57 /YR
NET ENERGY SAVINGS	4 MBTU/YR	NET DOLLAR SAVINGS	\$81 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6928		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

2 FOOT	1 2 LAMP U	92 W/FIXT =	92 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS
	36 2 LAMP @	92 W/FIXT =	3,312 WATTS
	42 3 LAMP @	137 W/FIXT =	5,754 WATTS
	34 4 LAMP @	184 W/FIXT =	6,256 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	1 2 LAMP U @	58 W/FIXT =	58 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	36 2 LAMP @	58 W/FIXT =	2,088 WATTS
	42 3 LAMP @	87 W/FIXT =	3,654 WATTS
	34 4 LAMP @	118 W/FIXT =	4,012 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	67,328 KWH/YR	ECO ENERGY CONSUMPTION	42,859 KWH/YR
BASELINE DEMAND	242,382 MJ/YR	ECO DEMAND	154,292 MJ/YR
	15.41 KW		9.81 KW

NET ENERGY SAVINGS	88,090 MJ/YR	NET DEMAND SAVINGS	\$792 /YR
NET ENERGY SAVINGS	83 MBTU/YR	NET DOLLAR SAVINGS	\$1,309 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6928		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
46 2 LAMP U	92 W/FIXT = 4,232 WATTS	46 2 LAMP U @	58 W/FIXT = 2,668 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
40 2 LAMP @	92 W/FIXT = 3,680 WATTS	40 2 LAMP @	58 W/FIXT = 2,320 WATTS
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS
4 LAMP @	184 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
69,119 KWH/YR		43,575 KWH/YR	
248,829 MJ/YR		156,871 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
7.91 KW		4.99 KW	

NET ENERGY SAVINGS
NET ENERGY SAVINGS

91,959 MJ/YR
87 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$413 /YR
\$953 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #:	6928-BARRACKS	
AREA:	SUPPLY ROOM & RESTROOMS	
LAMP USE:	8	
HOURS/DAY	7	
DAYS/WEEK	1	
PEAK USE	1 (1-YES, 2-NO)	

ELECTRIC COSTS:	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	\$11.78 PER KW

EXISTING INCANDESCENTS				COMPACT FLUORESCENT REPLACEMENT			
LAMPS @	52	WATTS =	0	LAMPS @	13	WATTS =	52
4 LAMPS @	60	WATTS =	240	8 LAMPS @	18	WATTS =	144
8 LAMPS @	75	WATTS =	600	0 LAMPS @	26	WATTS =	0
LAMPS @	90	WATTS =	0				
LAMPS @	100	WATTS =	0				
BASELINE ENERGY CONSUMPTION				ECO ENERGY CONSUMPTION			
2,446 KWH				196 KWH			
8,806 MJ				706 MJ			
0.84 KW				0.20 KW			
BASELINE DEMAND				ECO DEMAND			
NET ENERGY SAVINGS				NET DEMAND SAVINGS			
8,100 MJ/YR				\$91 /YR			
NET ENERGY SAVINGS				NET DOLLAR SAVINGS			
8 MBTU/YR				\$139 /YR			

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6928-BARRACKS

AREA: STAIRWELLS

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

24

7

1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
LAMPS @	75	WATTS =	1275	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	100	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	0	WATTS =	13	WATTS
LAMPS @	17	WATTS =	18	WATTS
LAMPS @	0	WATTS =	26	WATTS
LAMPS @	0	WATTS =	306	WATTS

BASELINE ENERGY CONSUMPTION

11,138 KWH
40,098 MJ

ECO ENERGY CONSUMPTION

306 KWH
1,102 MJ

BASELINE DEMAND

1.28 KW

ECO DEMAND

0.31 KW

NET ENERGY SAVINGS

38,997 MJ/YR

NET DEMAND SAVINGS

\$137 /YR

NET ENERGY SAVINGS

37 MBTU/YR

NET DOLLAR SAVINGS

\$366 /YR

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Estimate:      Bldg. 6928      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					123.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		44.77	\$0	\$1,230	\$0	\$0	\$1,230
0207082121	DEMO. 2X4' FLUOR FIXTURES					84.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		40.74	\$0	\$1,121	\$0	\$0	\$1,121
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					29.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		7.48	\$0	\$206	\$0	\$0	\$206
U02 SITEWORK		93	\$0	\$2,557	\$0	\$0	\$2,557

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					47.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	65.99	\$4,136	\$1,810	\$0	\$0	\$5,946
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					50.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	80.00	\$4,500	\$2,200	\$0	\$0	\$6,700
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					34.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	57.80	\$3,196	\$1,598	\$0	\$0	\$4,794
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					76.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	86.64	\$5,548	\$2,394	\$0	\$0	\$7,942
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	17.00 EA 0.00	53.00
Totals	17.00	\$434	\$468	\$0	\$0	\$902

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		314	\$17,940	\$8,635	\$0	\$0	\$26,575
ESTIMATE TOTAL		407	\$17,940	\$11,192	\$0	\$0	\$29,132
SALES TAX	5.00%		\$897				
MATL MARKUP	-40.00%		(\$7,176)				
LABOR MARKUP	-13.40%			(\$1,500)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$11,661	\$9,692	\$0	\$0	\$21,353
CONTINGENCY	10.00%						\$2,135
BOND	2.50%						\$534
PROFIT	10.00%						\$2,135
JOB TOTAL							\$26,158

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=====
Estimate:      Bldg. 6928      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:     Ft. Campbell     Job #:
Sq. footage:  City indx:
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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      93      $0      $2,557      $0      $0      $2,557
U16 ELECTRICAL   314    $17,940    $8,635      $0      $0    $26,575
TOTAL            407    $17,940   $11,192      $0      $0    $29,132

SALES TAX         5.00%      $897
MATL MARKUP      -40.00%   ($7,176)
LABOR MARKUP     -13.40%      ($1,500)
EQUIPT MARKUP    0.00%      $0
SUB MARKUP       0.00%      $0

TOTAL BEFORE CONTINGENC $11,661    $9,692      $0      $0    $21,353
CONTINGENCY       10.00%      $2,135
BOND              2.50%      $534
PROFIT           10.00%      $2,135
JOB TOTAL                                $26,158

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6929
 AREA: BARRACKS
 AREA USE:
 HOURS/DAY 8
 DAYS/WEEK 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 4 2 LAMP U 92 W/FIXT = 368 WATTS 4 2 LAMP U @ 58 W/FIXT = 232 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 30 2 LAMP @ 92 W/FIXT = 2,760 WATTS 30 2 LAMP @ 58 W/FIXT = 1,740 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 9 4 LAMP @ 184 W/FIXT = 1,656 WATTS 9 4 LAMP @ 118 W/FIXT = 1,062 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 13,931 KWH/YR ECO ENERGY CONSUMPTION 8,835 KWH/YR
 50,152 MJ/YR 31,806 MJ/YR
 BASELINE DEMAND 4.78 KW ECO DEMAND 3.03 KW

NET ENERGY SAVINGS 18,346 MJ/YR NET DEMAND SAVINGS \$247 /YR
 NET ENERGY SAVINGS 17 MBTU/YR NET DOLLAR SAVINGS \$355 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6929		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
ELECTRIC COSTS:			
BUILDING VOLTAGE:	277		

REPLACEMENT FIXTURE DATA

EXISTING FIXTURE DATA

2 FOOT		2 LAMP U	92 W/FIXT =	0 WATTS	2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT		1 LAMP @	45 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS
		18 2 LAMP @	92 W/FIXT =	1,656 WATTS	18 2 LAMP @	58 W/FIXT =	1,044 WATTS
		20 3 LAMP @	137 W/FIXT =	2,740 WATTS	20 3 LAMP @	87 W/FIXT =	1,740 WATTS
		24 4 LAMP @	184 W/FIXT =	4,416 WATTS	24 4 LAMP @	118 W/FIXT =	2,832 WATTS
8 FOOT		2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 WATTS
BASELINE ENERGY CONSUMPTION		38,491 KWH/YR	ECO ENERGY CONSUMPTION				24,531 KWH/YR
		138,567 MJ/YR					88,310 MJ/YR
BASELINE DEMAND		8.81 KW	ECO DEMAND				5.62 KW

NET ENERGY SAVINGS	50,256 MJ/YR	NET DEMAND SAVINGS	\$452 /YR
NET ENERGY SAVINGS	48 MBTU/YR	NET DOLLAR SAVINGS	\$747 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6929
 AREA: BARRACKS
 HOURS/DAY: 24
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
48 2 LAMP U	92 W/FIXT = 4,416 WATTS	48 2 LAMP U @	58 W/FIXT = 2,784 WATTS		
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS		
40 2 LAMP @	92 W/FIXT = 3,680 WATTS	40 2 LAMP @	58 W/FIXT = 2,320 WATTS		
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS		
4 LAMP @	184 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0 WATTS		
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS		

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	70,727 KWH/YR	ECO ENERGY CONSUMPTION	44,589 KWH/YR
BASELINE DEMAND	254,616 MJ/YR	ECO DEMAND	160,519 MJ/YR
	8.10 KW		5.10 KW

NET ENERGY SAVINGS	94,097 MJ/YR	NET DEMAND SAVINGS	\$423 /YR
NET ENERGY SAVINGS	89 MBTU/YR	NET DOLLAR SAVINGS	\$976 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6929-BARRACKS

AREA: STAIRWELLS

LAMP USE: 24

HOURS/DAY: 7

DAYS/WEEK: 1 (1-YES, 2-NO)

PEAK USE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS	=	0	WATTS
LAMPS @	60	WATTS =	0	WATTS	=	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS	=	216	WATTS
LAMPS @	90	WATTS =	0	WATTS	=	0	WATTS
LAMPS @	100	WATTS =	0	WATTS	=	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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Estimate:      Bldg. 6929      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					118.00 EA	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	42.95	\$0	\$1,180	\$0	\$0	\$1,180	
0207082121	DEMO. 2X4' FLUOR FIXTURES					59.00 EA	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	28.62	\$0	\$788	\$0	\$0	\$788	
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					16.00 EA	
Unit values	0.32	0.00	8.80	0.00	0.00	8.80	
Totals	5.12	\$0	\$141	\$0	\$0	\$141	
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					12.00 EA	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	3.10	\$0	\$85	\$0	\$0	\$85	
U02 SITEWORK	80	\$0	\$2,194	\$0	\$0	\$2,194	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA	
Unit values	1.00	185.00		27.50	0.00	0.00	212.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					52.00 EA	
Unit values	1.40	88.00		38.50	0.00	0.00	126.50
Totals	73.01	\$4,576		\$2,002	\$0	\$0	\$6,578
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					6.00 EA	
Unit values	1.51	84.00		41.50	0.00	0.00	125.50
Totals	9.06	\$504		\$249	\$0	\$0	\$753
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					20.00 EA	
Unit values	1.60	90.00		44.00	0.00	0.00	134.00
Totals	32.00	\$1,800		\$880	\$0	\$0	\$2,680
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					33.00 EA	
Unit values	1.70	94.00		47.00	0.00	0.00	141.00
Totals	56.10	\$3,102		\$1,551	\$0	\$0	\$4,653
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					66.00 EA	
Unit values	1.14	73.00		31.50	0.00	0.00	104.50
Totals	75.24	\$4,818		\$2,079	\$0	\$0	\$6,897
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00		31.50	0.00	0.00	117.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00		31.50	0.00	0.00	121.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					16.00 EA	
Unit values	1.40	89.00		38.50	0.00	0.00	127.50
Totals	22.40	\$1,424		\$616	\$0	\$0	\$2,040
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50		13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      274    $16,350    $7,542         $0        $0    $23,892

ESTIMATE TOTAL      354    $16,350    $9,736         $0        $0    $26,086

SALES TAX           5.00%      $818
MATL MARKUP        -40.00%    ($6,540)
LABOR MARKUP       -13.40%    ($1,305)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $10,628    $8,431         $0        $0    $19,059
CONTINGENCY          10.00%      $1,906
BOND                  2.50%      $476
PROFIT               10.00%      $1,906

JOB TOTAL                                $23,347
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Estimate:      Bldg. 6929      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      80      $0      $2,194      $0      $0      $2,194
U16 ELECTRICAL   274    $16,350    $7,542      $0      $0    $23,892
TOTAL            354    $16,350    $9,736      $0      $0    $26,086

SALES TAX          5.00%      $818
MATL MARKUP       -40.00%    ($6,540)
LABOR MARKUP      -13.40%    ($1,305)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%

TOTAL BEFORE CONTINGENC $10,628    $8,431      $0      $0    $19,059
CONTINGENCY        10.00%
BOND                2.50%
PROFIT              10.00%

JOB TOTAL                                $23,347

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19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:

6930

AREA:

BARRACKS

AREA USE:

HOURS/DAY

8

DAYS/WEEK

7

ELECTRIC COSTS:

ENERGY CHARGE

\$0.0211

PER KWH

DEMAND CHARGE

\$11.78

PER KW

BUILDING VOLTAGE:

277

REPLACEMENT FIXTURE DATA

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	82 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0 WATTS
	2 LAMP @	92 W/FIXT =	0 WATTS	0.2 LAMP @	58 W/FIXT =	0 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0 WATTS
	2 4 LAMP @	184 W/FIXT =	368 WATTS	2 4 LAMP @	118 W/FIXT =	236 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	1,072 KWH/YR 3,858 MJ/YR	ECO ENERGY CONSUMPTION	687 KWH/YR 2,474 MJ/YR
BASELINE DEMAND	0.37 KW	ECO DEMAND	0.24 KW

NET ENERGY SAVINGS	1,384 MJ/YR	NET DEMAND SAVINGS	\$19 /YR
NET ENERGY SAVINGS	1 MBTU/YR	NET DOLLAR SAVINGS	\$27 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6930		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

2 FOOT	52 2 LAMP U	92 W/FIXT =	4,784 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS
	47 2 LAMP @	92 W/FIXT =	4,324 WATTS
	42 3 LAMP @	137 W/FIXT =	5,754 WATTS
	48 4 LAMP @	184 W/FIXT =	8,832 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	52 2 LAMP U @	58 W/FIXT =	3,016 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	47 2 LAMP @	58 W/FIXT =	2,726 WATTS
	42 3 LAMP @	87 W/FIXT =	3,654 WATTS
	48 4 LAMP @	118 W/FIXT =	5,664 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	103,495 KWH/YR	ECO ENERGY CONSUMPTION	65,782 KWH/YR
	372,583 MJ/YR		236,815 MJ/YR
BASELINE DEMAND	23.69 KW	ECO DEMAND	15.06 KW

NET ENERGY SAVINGS	135,768 MJ/YR	NET DEMAND SAVINGS	\$1,221 /YR
NET ENERGY SAVINGS	129 MBTU/YR	NET DOLLAR SAVINGS	\$2,018 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6930
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 46 2 LAMP U 92 W/FIXT = 4,232 WATTS
 2 FOOT 46 2 LAMP U @ 58 W/FIXT = 2,668 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS
 40 2 LAMP @ 92 W/FIXT = 3,680 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS
 4 LAMP @ 184 W/FIXT = 0 WATTS
 4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 40 2 LAMP @ 58 W/FIXT = 2,320 WATTS
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 0 4 LAMP @ 118 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS
 8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 69,119 KWH/YR ECO ENERGY CONSUMPTION 43,575 KWH/YR
 248,829 MJ/YR 156,871 MJ/YR
 BASELINE DEMAND 7.91 KW ECO DEMAND 4.99 KW

NET ENERGY SAVINGS 91,959 MJ/YR NET DEMAND SAVINGS \$413 /YR
 NET ENERGY SAVINGS 87 MBTU/YR NET DOLLAR SAVINGS \$953 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6930-BARRACKS

AREA: OFFICES

LAMP USE:

HOURS/DAY 12

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52	WATTS =	0	WATTS
LAMPS @ 60	WATTS =	0	WATTS
5 LAMPS @ 75	WATTS =	375	WATTS
LAMPS @ 90	WATTS =	0	WATTS
LAMPS @ 100	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
5 LAMPS @	18	WATTS =	90	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

1,638 KWH

5,897 MJ

ECO ENERGY CONSUMPTION

90 KWH

324 MJ

BASELINE DEMAND

0.38 KW

ECO DEMAND

0.09 KW

NET ENERGY SAVINGS

5,573 MJ/YR

NET DEMAND SAVINGS

\$40 /YR

NET ENERGY SAVINGS

5 MBTU/YR

NET DOLLAR SAVINGS

\$73 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6930-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS =	0 WATTS	0 LAMPS @ 13 WATTS =	0 WATTS
LAMPS @ 60 WATTS =	0 WATTS		
12 LAMPS @ 75 WATTS =	900 WATTS	12 LAMPS @ 18 WATTS =	216 WATTS
LAMPS @ 90 WATTS =	0 WATTS	0 LAMPS @ 26 WATTS =	0 WATTS
LAMPS @ 100 WATTS =	0 WATTS		

COMPACT FLUORESCENT REPLACEMENT

BASELINE ENERGY CONSUMPTION	7,862 KWH	ECO ENERGY CONSUMPTION	216 KWH
	28,305 MJ		778 MJ
BASELINE DEMAND	0.90 KW	ECO DEMAND	0.22 KW

NET ENERGY SAVINGS	27,527 MJ/YR	NET DEMAND SAVINGS	\$97 /YR
NET ENERGY SAVINGS	26 MBTU/YR	NET DOLLAR SAVINGS	\$258 /YR

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Estimate:      Bldg. 6930      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					145.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		52.78	\$0	\$1,450	\$0	\$0	\$1,450
0207082121	DEMO. 2X4' FLUOR FIXTURES					92.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		44.62	\$0	\$1,228	\$0	\$0	\$1,228
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					40.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		12.80	\$0	\$352	\$0	\$0	\$352
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					17.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.39	\$0	\$121	\$0	\$0	\$121
U02 SITEWORK		115	\$0	\$3,151	\$0	\$0	\$3,151

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE				0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS				98.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	137.59	\$8,624	\$3,773	\$0	\$0	\$12,397
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS				0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS				42.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	67.20	\$3,780	\$1,848	\$0	\$0	\$5,628
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS				50.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	85.00	\$4,700	\$2,350	\$0	\$0	\$7,050
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS				47.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	53.58	\$3,431	\$1,481	\$0	\$0	\$4,912
1661309909	SUR FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR				0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8				40.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	56.00	\$3,560	\$1,540	\$0	\$0	\$5,100
1661388040	COMP FLUOR LAMP, 26 W QUAD				12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	5.00 EA 0.00	53.00
Totals	5.00	\$128	\$138	\$0	\$0	\$266

```
=====
Line #      Description
-----
            Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      411    $24,349    $11,295           $0        $0    $35,644

ESTIMATE TOTAL      526    $24,349    $14,446           $0        $0    $38,795

SALES TAX          5.00%    $1,217
MATL MARKUP       -40.00%   ($9,740)
LABOR MARKUP      -13.40%   ($1,936)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%

TOTAL BEFORE CONTINGENC $15,827    $12,510           $0        $0    $28,337
CONTINGENCY         10.00%                $2,834
BOND                 2.50%                $708
PROFIT              10.00%                $2,834

JOB TOTAL                                $34,713
=====
```

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=====
Estimate:      Bldg. 6930      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

```

SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      115      $0      $3,151      $0      $0      $3,151
U16 ELECTRICAL    411    $24,349    $11,295      $0      $0    $35,644
TOTAL              526    $24,349    $14,446      $0      $0    $38,795

SALES TAX          5.00%      $1,217
MATL MARKUP        -40.00%    ($9,740)
LABOR MARKUP        -13.40%    ($1,936)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $15,827    $12,510      $0      $0    $28,337
CONTINGENCY         10.00%              $2,834
BOND                 2.50%              $708
PROFIT               10.00%              $2,834
JOB TOTAL                                $34,713

```

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

6931

BARRACKS

BUILDING #:

AREA:

AREA USE:

HOURS/DAY

DAYS/WEEK

8

7

ELECTRIC COSTS:

ENERGY CHARGE

DEMAND CHARGE

\$0.0211

\$11.78

PER KWH

PER KW

BUILDING VOLTAGE:

277

REPLACEMENT FIXTURE DATA

EXISTING FIXTURE DATA

2 FOOT		4 FOOT		8 FOOT	
2 LAMP U	92 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0 WATTS	2 LAMP @	180 W/FIXT = 0 WATTS
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS	7 4 LAMP @	1,288 WATTS
2 LAMP @	92 W/FIXT = 0 WATTS	0 2 LAMP @	58 W/FIXT = 0 WATTS		
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS		
7 4 LAMP @	184 W/FIXT = 1,288 WATTS	7 4 LAMP @	118 W/FIXT = 826 WATTS		

BASELINE ENERGY CONSUMPTION	3,751 KWH/YR 13,502 MJ/YR	ECO ENERGY CONSUMPTION	2,405 KWH/YR 8,659 MJ/YR
BASELINE DEMAND	1.29 KW	ECO DEMAND	0.83 KW

NET ENERGY SAVINGS	4,843 MJ/YR	NET DEMAND SAVINGS	\$65 /YR
NET ENERGY SAVINGS	5 MBTU/YR	NET DOLLAR SAVINGS	\$94 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6931
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 80 2 LAMP @ 92 W/FIXT = 7,360 WATTS 80 2 LAMP @ 58 W/FIXT = 4,640 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 5 4 LAMP @ 184 W/FIXT = 920 WATTS 5 4 LAMP @ 118 W/FIXT = 590 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 36,167 KWH/YR ECO ENERGY CONSUMPTION 22,845 KWH/YR
 130,201 MJ/YR 82,241 MJ/YR
 BASELINE DEMAND 8.28 KW ECO DEMAND 5.23 KW

NET ENERGY SAVINGS 47,961 MJ/YR NET DEMAND SAVINGS \$431 /YR
 NET ENERGY SAVINGS 45 MBTU/YR NET DOLLAR SAVINGS \$713 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6931		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT	45 2 LAMP U	92 W/FIXT =	4,140 WATTS		
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS		
	40 2 LAMP @	92 W/FIXT =	3,680 WATTS		
	3 LAMP @	137 W/FIXT =	0 WATTS		
	4 LAMP @	184 W/FIXT =	0 WATTS		
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS		

REPLACEMENT FIXTURE DATA

2 FOOT	45 2 LAMP U @	58 W/FIXT =	2,610 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	40 2 LAMP @	58 W/FIXT =	2,320 WATTS
	0 3 LAMP @	87 W/FIXT =	0 WATTS
	0 4 LAMP @	118 W/FIXT =	0 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	68,316 KWH/YR	ECO ENERGY CONSUMPTION	43,068 KWH/YR
	245,936 MJ/YR		155,047 MJ/YR
BASELINE DEMAND	7.82 KW	ECO DEMAND	4.93 KW

NET ENERGY SAVINGS	90,889 MJ/YR	NET DEMAND SAVINGS	\$409 /YR
NET ENERGY SAVINGS	86 MBTU/YR	NET DOLLAR SAVINGS	\$942 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6931-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	100	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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=====
Estimate:      Bldg. 6931      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					103.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		37.49	\$0	\$1,030	\$0	\$0	\$1,030
0207082121	DEMO. 2X4' FLUOR FIXTURES					74.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		35.89	\$0	\$988	\$0	\$0	\$988
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					12.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.10	\$0	\$85	\$0	\$0	\$85
U02 SITEWORK		77	\$0	\$2,103	\$0	\$0	\$2,103

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE				0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS				45.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	63.18	\$3,960	\$1,733	\$0	\$0	\$5,693
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS				62.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	93.62	\$5,208	\$2,573	\$0	\$0	\$7,781
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS				0.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS				12.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	20.40	\$1,128	\$564	\$0	\$0	\$1,692
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS				58.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	66.12	\$4,234	\$1,827	\$0	\$0	\$6,061
1661309909	SUR FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR				0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD				12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

```
=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      250    $14,656    $6,862         $0        $0    $21,518

ESTIMATE TOTAL      327    $14,656    $8,965         $0        $0    $23,621

SALES TAX           5.00%      $733
MATL MARKUP        -40.00%    ($5,862)
LABOR MARKUP       -13.40%    ($1,201)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $9,526    $7,764         $0        $0    $17,290
CONTINGENCY           10.00%         $1,729
BOND                   2.50%         $432
PROFIT                 10.00%         $1,729

JOB TOTAL                                     $21,180
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=====
Estimate:      Bldg. 6931      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      77      $0      $2,103      $0      $0      $2,103
U16 ELECTRICAL    250    $14,656    $6,862      $0      $0    $21,518
TOTAL             327    $14,656    $8,965      $0      $0    $23,621

SALES TAX          5.00%      $733
MATL MARKUP        -40.00%    ($5,862)
LABOR MARKUP        -13.40%    ($1,201)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC  $9,526    $7,764      $0      $0    $17,290
CONTINGENCY          10.00%      $1,729
BOND                  2.50%      $432
PROFIT                10.00%      $1,729
JOB TOTAL                                     $21,180

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6936
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS 0.2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0.1 LAMP @ 29 W/FIXT = 0 WATTS
 2 LAMP @ 92 W/FIXT = 0 WATTS 0.2 LAMP @ 58 W/FIXT = 0 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0.3 LAMP @ 87 W/FIXT = 0 WATTS
 4 LAMP @ 184 W/FIXT = 736 WATTS 4 LAMP @ 118 W/FIXT = 472 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0.2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 2,143 KWH/YR ECO ENERGY CONSUMPTION 1,374 KWH/YR
 7,716 MJ/YR 4,948 MJ/YR
 BASELINE DEMAND 0.74 KW ECO DEMAND 0.47 KW

NET ENERGY SAVINGS 2,768 MJ/YR NET DEMAND SAVINGS \$37 /YR
 NET ENERGY SAVINGS 3 MBTU/YR NET DOLLAR SAVINGS \$54 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6936
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 31 2 LAMP @ 92 W/FIXT = 2,852 WATTS 31 2 LAMP @ 58 W/FIXT = 1,798 WATTS
 28 3 LAMP @ 137 W/FIXT = 3,836 WATTS 28 3 LAMP @ 87 W/FIXT = 2,436 WATTS
 6 4 LAMP @ 184 W/FIXT = 1,104 WATTS 6 4 LAMP @ 118 W/FIXT = 708 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 34,035 KWH/YR ECO ENERGY CONSUMPTION 21,587 KWH/YR
 122,528 MJ/YR 77,712 MJ/YR
 BASELINE DEMAND 7.79 KW ECO DEMAND 4.94 KW

NET ENERGY SAVINGS 44,816 MJ/YR NET DEMAND SAVINGS \$403 YR
 NET ENERGY SAVINGS 42 MBTU/YR NET DOLLAR SAVINGS \$666 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6936
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 33 2 LAMP U 92 W/FIXT = 3,036 WATTS
 2 FOOT 33 2 LAMP U @ 58 W/FIXT = 1,914 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS
 40 2 LAMP @ 92 W/FIXT = 3,680 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS
 2 4 LAMP @ 184 W/FIXT = 368 WATTS
 4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 40 2 LAMP @ 58 W/FIXT = 2,320 WATTS
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 2 4 LAMP @ 118 W/FIXT = 236 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS
 8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 61,886 KWH/YR ECO ENERGY CONSUMPTION 39,050 KWH/YR
 222,789 MJ/YR 140,580 MJ/YR
 BASELINE DEMAND 7.08 KW ECO DEMAND 4.47 KW

NET ENERGY SAVINGS 82,209 MJ/YR NET DEMAND SAVINGS \$370 /YR
 NET ENERGY SAVINGS 78 MBTU/YR NET DOLLAR SAVINGS \$852 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6936-BARRACKS

AREA: STAIRWELLS

LAMP USE: 24

DAYS/WEEK: 7

PEAK USE: 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	100	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	0	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ
0.22 KW

BASELINE DEMAND

0.90 KW

ECO DEMAND

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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=====
Estimate:      Bldg. 6936          Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study     Bid Date:
Location:      Ft. Campbell        Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					104.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		37.86	\$0	\$1,040	\$0	\$0	\$1,040
0207082121	DEMO. 2X4' FLUOR FIXTURES					40.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		19.40	\$0	\$534	\$0	\$0	\$534
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					12.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.10	\$0	\$85	\$0	\$0	\$85
U02 SITEWORK		61	\$0	\$1,659	\$0	\$0	\$1,659

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE				0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS				33.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	46.33	\$2,904	\$1,271	\$0	\$0	\$4,175
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS				0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS				28.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	44.80	\$2,520	\$1,232	\$0	\$0	\$3,752
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS				12.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	20.40	\$1,128	\$564	\$0	\$0	\$1,692
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS				71.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	80.94	\$5,183	\$2,237	\$0	\$0	\$7,420
1661309909	SUR FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR				0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD				12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

```
=====
Line #      Description
-----
      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      199    $11,861    $5,469         $0        $0    $17,330

ESTIMATE TOTAL      260    $11,861    $7,128         $0        $0    $18,989

SALES TAX           5.00%      $593
MATL MARKUP        -40.00%    ($4,744)
LABOR MARKUP       -13.40%          ($955)
EQUIPT MARKUP       0.00%          $0
SUB MARKUP          0.00%          $0

TOTAL BEFORE CONTINGENC    $7,710    $6,173         $0        $0    $13,882
CONTINGENCY           10.00%          $1,388
BOND                   2.50%          $347
PROFIT                10.00%          $1,388

JOB TOTAL                                $17,006
=====
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=====
Estimate:      Bldg. 6936      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      61      $0    $1,659      $0      $0    $1,659
U16 ELECTRICAL   199    $11,861    $5,469      $0      $0    $17,330
TOTAL             260    $11,861    $7,128      $0      $0    $18,989

SALES TAX         5.00%      $593
MATL MARKUP       -40.00%    ($4,744)
LABOR MARKUP      -13.40%    ($955)
EQUIPT MARKUP     0.00%
SUB MARKUP        0.00%

TOTAL BEFORE CONTINGENC  $7,710    $6,173      $0      $0    $13,882
CONTINGENCY        10.00%      $1,388
BOND                2.50%      $347
PROFIT              10.00%      $1,388
JOB TOTAL                                     $17,006

```


FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6937	
AREA:	BARRACKS	
AREA USE:		
HOURS/DAY	8	\$0.0211 PER KWH
DAYS/WEEK	7	\$11.78 PER KW
BUILDING VOLTAGE: 277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	92 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
2 LAMP @	92 W/FIXT = 0 WATTS	0 2 LAMP @	58 W/FIXT = 0 WATTS
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS
4 4 LAMP @	184 W/FIXT = 736 WATTS	4 4 LAMP @	118 W/FIXT = 472 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION	2,143 KWH/YR	ECO ENERGY CONSUMPTION	1,374 KWH/YR
	7,716 MJ/YR		4,948 MJ/YR
BASELINE DEMAND	0.74 KW	ECO DEMAND	0.47 KW

NET ENERGY SAVINGS	2,768 MJ/YR	NET DEMAND SAVINGS	\$37 YR
NET ENERGY SAVINGS	3 MBTU/YR	NET DOLLAR SAVINGS	\$54 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6937		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
ELECTRIC COSTS:			
		\$0.0211	PER KWH
		\$11.78	PER KW
BUILDING VOLTAGE: 277			

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	92 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
2 LAMP @	92 W/FIXT = 0 WATTS	0 2 LAMP @	58 W/FIXT = 0 WATTS
24 3 LAMP @	137 W/FIXT = 3,288 WATTS	24 3 LAMP @	87 W/FIXT = 2,088 WATTS
42 4 LAMP @	184 W/FIXT = 7,728 WATTS	42 4 LAMP @	118 W/FIXT = 4,956 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
48,118 KWH/YR		30,768 KWH/YR	
173,224 MJ/YR		110,765 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
11.02 KW		7.04 KW	

NET ENERGY SAVINGS	62,459 MJ/YR	NET DEMAND SAVINGS	\$561 NYR
NET ENERGY SAVINGS	59 MBTU/YR	NET DOLLAR SAVINGS	\$928 NYR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6937
 AREA: BARRACKS
 AREA USE:
 HOURS/DAY: 24
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 49 2 LAMP U 92 W/FIXT = 4,508 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS
 56 2 LAMP @ 92 W/FIXT = 5,152 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS
 3 4 LAMP @ 184 W/FIXT = 552 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 49 2 LAMP U @ 58 W/FIXT = 2,842 WATTS

4 FOOT
 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 56 2 LAMP @ 58 W/FIXT = 3,248 WATTS
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 3 4 LAMP @ 118 W/FIXT = 354 WATTS

8 FOOT
 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 89,212 KWH/YR
 321,163 MJ/YR
 ECO ENERGY CONSUMPTION 56,295 KWH/YR
 202,661 MJ/YR

BASELINE DEMAND 10.21 KW
 ECO DEMAND 6.44 KW

NET ENERGY SAVINGS 118,502 MJ/YR
 NET ENERGY SAVINGS 112 MBTU/YR
 NET DEMAND SAVINGS \$533 /YR
 NET DOLLAR SAVINGS \$1,229 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6937-BARRACKS

AREA: STORAGE

LAMP USE:

HOURS/DAY 8

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
LAMPS @	75	WATTS =	0	WATTS
LAMPS @	90	WATTS =	0	WATTS
4 LAMPS @	100	WATTS =	400	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
0 LAMPS @	18	WATTS =	0	WATTS
4 LAMPS @	26	WATTS =	104	WATTS

BASELINE ENERGY CONSUMPTION

1,165 KWH
4,193 MJ

ECO ENERGY CONSUMPTION

104 KWH
374 MJ

BASELINE DEMAND

0.40 KW

ECO DEMAND

0.10 KW

NET ENERGY SAVINGS

3,819 MJ/YR

NET DEMAND SAVINGS

\$42 /YR

NET ENERGY SAVINGS

4 MBTU/YR

NET DOLLAR SAVINGS

\$64 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6937-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS		0	LAMPS @	13	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS		0	LAMPS @				
12 LAMPS @	75	WATTS =	900	WATTS		12	LAMPS @	18	WATTS =	216	WATTS
LAMPS @	90	WATTS =	0	WATTS		0	LAMPS @	26	WATTS =	0	WATTS
LAMPS @	100	WATTS =	0	WATTS							

COMPACT FLUORESCENT REPLACEMENT

BASELINE ENERGY CONSUMPTION	7,862 KWH	ECO ENERGY CONSUMPTION	216 KWH
	28,305 MJ		778 MJ
BASELINE DEMAND	0.90 KW	ECO DEMAND	0.22 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

27,527 MJ/YR
26 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$97 /YR
\$258 /YR

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=====
Estimate:      Bldg. 6937      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					105.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		38.22	\$0	\$1,050	\$0	\$0	\$1,050
0207082121	DEMO. 2X4' FLUOR FIXTURES					73.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		35.41	\$0	\$975	\$0	\$0	\$975
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					16.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.13	\$0	\$114	\$0	\$0	\$114
U02 SITEWORK		78	\$0	\$2,139	\$0	\$0	\$2,139

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					49.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	68.80	\$4,312	\$1,887	\$0	\$0	\$6,199
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					24.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	38.40	\$2,160	\$1,056	\$0	\$0	\$3,216
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					49.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	83.30	\$4,606	\$2,303	\$0	\$0	\$6,909
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					56.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	63.84	\$4,088	\$1,764	\$0	\$0	\$5,852
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	4.00 EA 0.00	53.00
Totals	4.00	\$102	\$110	\$0	\$0	\$212

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
U16 ELECTRICAL	265	\$15,394	\$7,285	\$0	\$0	\$22,679
ESTIMATE TOTAL	343	\$15,394	\$9,424	\$0	\$0	\$24,818
SALES TAX	5.00%	\$770				
MATL MARKUP	-40.00%	(\$6,158)				
LABOR MARKUP	-13.40%		(\$1,263)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$10,006	\$8,161	\$0	\$0	\$18,167
CONTINGENCY	10.00%					\$1,817
BOND	2.50%					\$454
PROFIT	10.00%					\$1,817
JOB TOTAL						\$22,255

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=====
Estimate:      Bldg. 6937      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      78      $0      $2,139      $0      $0      $2,139
U16 ELECTRICAL    265    $15,394    $7,285      $0      $0    $22,679
TOTAL             343    $15,394    $9,424      $0      $0    $24,818

SALES TAX          5.00%      $770
MATL MARKUP        -40.00%    ($6,158)
LABOR MARKUP        -13.40%    ($1,263)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $10,006    $8,161      $0      $0    $18,167
CONTINGENCY         10.00%              $1,817
BOND                 2.50%              $454
PROFIT               10.00%              $1,817
JOB TOTAL                                $22,255

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6938
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS	2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	12 2 LAMP @	92 W/FIXT =	1,104 WATTS		12 2 LAMP @	58 W/FIXT =	696 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS		0 3 LAMP @	87 W/FIXT =	0 WATTS
	5 4 LAMP @	184 W/FIXT =	920 WATTS		5 4 LAMP @	118 W/FIXT =	590 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	5,894 KWH/YR	ECO ENERGY CONSUMPTION	3,745 KWH/YR
	21,218 MJ/YR		13,481 MJ/YR
BASELINE DEMAND	2.02 KW	ECO DEMAND	1.29 KW

NET ENERGY SAVINGS 7,737 MJ/YR
 NET ENERGY SAVINGS 7 MBTU/YR
 NET DEMAND SAVINGS \$104 /YR
 NET DOLLAR SAVINGS \$150 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6938
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS
 1 2 LAMP @ 92 W/FIXT = 92 WATTS
 80 3 LAMP @ 137 W/FIXT = 10,960 WATTS
 36 4 LAMP @ 184 W/FIXT = 6,624 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 1 2 LAMP @ 58 W/FIXT = 58 WATTS
 80 3 LAMP @ 87 W/FIXT = 6,960 WATTS
 36 4 LAMP @ 118 W/FIXT = 4,248 WATTS

8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 77,209 KWH/YR ECO ENERGY CONSUMPTION 49,210 KWH/YR
 277,952 MJ/YR 177,156 MJ/YR
 BASELINE DEMAND 17.68 KW ECO DEMAND 11.27 KW

NET ENERGY SAVINGS 100,796 MJ/YR NET DEMAND SAVINGS \$906 /YR
 NET ENERGY SAVINGS 96 MBTU/YR NET DOLLAR SAVINGS \$1,498 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6938
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 48 2 LAMP U 92 W/FIXT = 4,416 WATTS 58 W/FIXT = 2,784 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS 29 W/FIXT = 0 WATTS
 40 2 LAMP @ 92 W/FIXT = 3,680 WATTS 58 W/FIXT = 2,320 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 87 W/FIXT = 0 WATTS
 4 LAMP @ 184 W/FIXT = 0 WATTS 118 W/FIXT = 0 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 70,727 KWH/YR 44,589 KWH/YR
 254,616 MJ/YR 160,519 MJ/YR
 BASELINE DEMAND 8.10 KW 5.10 KW

NET ENERGY SAVINGS 94,097 MJ/YR NET DEMAND SAVINGS \$423 /YR
 NET ENERGY SAVINGS 89 MBTU/YR NET DOLLAR SAVINGS \$976 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6938-BARRACKS
 AREA: OFFICES
 LAMP USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS				COMPACT FLUORESCENT REPLACEMENT			
LAMPS @	52	WATTS =	0 WATTS	0 LAMPS @	13	WATTS =	0 WATTS
LAMPS @	60	WATTS =	0 WATTS				
LAMPS @	75	WATTS =	0 WATTS	0 LAMPS @	18	WATTS =	0 WATTS
LAMPS @	90	WATTS =	0 WATTS	4 LAMPS @	26	WATTS =	104 WATTS
4 LAMPS @	150	WATTS =	600 WATTS				
BASELINE ENERGY CONSUMPTION				ECO ENERGY CONSUMPTION			
2,621 KWH				104 KWH			
9,435 MJ				374 MJ			
0.60 KW				0.10 KW			
BASELINE DEMAND				ECO DEMAND			

NET ENERGY SAVINGS	9,060 MJ/YR	NET DEMAND SAVINGS	\$70 /YR
NET ENERGY SAVINGS	9 MBTU/YR	NET DOLLAR SAVINGS	\$123 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6938-BARRACKS
AREA: STAIRWELLS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
2 LAMPS @	150	WATTS =	300	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
2 LAMPS @	26	WATTS =	52	WATTS

BASELINE ENERGY CONSUMPTION

10,483 KWH
37,740 MJ

ECO ENERGY CONSUMPTION

268 KWH
965 MJ

BASELINE DEMAND

1.20 KW

ECO DEMAND

0.27 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

36,775 MJ/YR
35 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$132 /YR
\$348 /YR

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=====
Estimate:      Bldg. 6938      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					89.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		32.40	\$0	\$890	\$0	\$0	\$890
0207082121	DEMO. 2X4' FLUOR FIXTURES					121.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		58.69	\$0	\$1,615	\$0	\$0	\$1,615
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					12.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		3.84	\$0	\$106	\$0	\$0	\$106
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					18.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		4.64	\$0	\$128	\$0	\$0	\$128
U02 SITEWORK		100	\$0	\$2,739	\$0	\$0	\$2,739

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA	
Unit values	1.00	185.00		27.50	0.00	0.00	212.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					48.00 EA	
Unit values	1.40	88.00		38.50	0.00	0.00	126.50
Totals	67.39	\$4,224		\$1,848	\$0	\$0	\$6,072
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00		41.50	0.00	0.00	125.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					80.00 EA	
Unit values	1.60	90.00		44.00	0.00	0.00	134.00
Totals	128.00	\$7,200		\$3,520	\$0	\$0	\$10,720
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					41.00 EA	
Unit values	1.70	94.00		47.00	0.00	0.00	141.00
Totals	69.70	\$3,854		\$1,927	\$0	\$0	\$5,781
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					41.00 EA	
Unit values	1.14	73.00		31.50	0.00	0.00	104.50
Totals	46.74	\$2,993		\$1,292	\$0	\$0	\$4,285
1661309909	SUR FLUOR 1X4' W 2 32W T8					12.00 EA	
Unit values	1.14	86.00		31.50	0.00	0.00	117.50
Totals	13.68	\$1,032		\$378	\$0	\$0	\$1,410
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00		31.50	0.00	0.00	121.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.40	89.00		38.50	0.00	0.00	127.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50		13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	6.00 EA	53.00
Totals	6.00	\$153	\$165	\$0	\$0	\$318

```
=====
Line #      Description
-----
      Manhours  Matl    Labor  Equipment  Sub    Total
=====
U16 ELECTRICAL      338    $19,582    $9,295         $0        $0    $28,877

ESTIMATE TOTAL      438    $19,582    $12,034         $0        $0    $31,616

SALES TAX           5.00%      $979
MATL MARKUP        -40.00%    ($7,833)
LABOR MARKUP       -13.40%      ($1,613)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $12,728    $10,421         $0        $0    $23,150
CONTINGENCY          10.00%      $2,315
BOND                 2.50%      $579
PROFIT              10.00%      $2,315

JOB TOTAL                                $28,358
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Estimate:      Bldg. 6938      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      100      $0      $2,739      $0      $0      $2,739
U16 ELECTRICAL    338    $19,582    $9,295      $0      $0    $28,877
TOTAL             438    $19,582    $12,034      $0      $0    $31,616

SALES TAX          5.00%      $979
MATL MARKUP        -40.00%    ($7,833)
LABOR MARKUP       -13.40%    ($1,613)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%

TOTAL BEFORE CONTINGENC  $12,728    $10,421      $0      $0    $23,150
CONTINGENCY         10.00%      $2,315
BOND                 2.50%      $579
PROFIT              10.00%      $2,315
JOB TOTAL                                     $28,358

```

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6939
 AREA: BARRACKS
 AREA USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 92 W/FIXT = 0 WATTS 0 2 LAMP U @ 58 W/FIXT = 0 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 2 LAMP @ 92 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 4 4 LAMP @ 184 W/FIXT = 736 WATTS 4 4 LAMP @ 118 W/FIXT = 472 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 2,143 KWH/YR ECO ENERGY CONSUMPTION 1,374 KWH/YR
 7,716 MJ/YR 4,948 MJ/YR
 BASELINE DEMAND 0.74 KW ECO DEMAND 0.47 KW

NET ENERGY SAVINGS 2,768 MJ/YR NET DEMAND SAVINGS \$37 YR
 NET ENERGY SAVINGS 3 MBTU/YR NET DOLLAR SAVINGS \$54 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6939
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
2 LAMP U	92 W/FIXT = 0 WATTS	0 2 LAMP U @	58 W/FIXT = 0 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
21 2 LAMP @	92 W/FIXT = 1,932 WATTS	21 2 LAMP @	58 W/FIXT = 1,218 WATTS
24 3 LAMP @	137 W/FIXT = 3,288 WATTS	24 3 LAMP @	87 W/FIXT = 2,088 WATTS
37 4 LAMP @	184 W/FIXT = 6,808 WATTS	37 4 LAMP @	118 W/FIXT = 4,366 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
52,538 KWH/YR		33,511 KWH/YR	
189,138 MJ/YR		120,641 MJ/YR	
BASELINE DEMAND		ECO DEMAND	
12.03 KW		7.67 KW	

NET ENERGY SAVINGS	68,497 MJ/YR	NET DEMAND SAVINGS	\$616 /YR
NET ENERGY SAVINGS	65 MBTU/YR	NET DOLLAR SAVINGS	\$1,018 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6939
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 49 2 LAMP U 92 W/FIXT = 4 508 WATTS 49 2 LAMP U @ 58 W/FIXT = 2 842 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 40 2 LAMP @ 92 W/FIXT = 3 680 WATTS 40 2 LAMP @ 58 W/FIXT = 2 320 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 4 LAMP @ 184 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 71,530 KWH/YR ECO ENERGY CONSUMPTION 45,095 KWH/YR
 257,509 MJ/YR 162,343 MJ/YR
 BASELINE DEMAND 8.19 KW ECO DEMAND 5.16 KW

NET ENERGY SAVINGS 95,166 MJ/YR NET DEMAND SAVINGS \$428 /YR
 NET ENERGY SAVINGS 90 MBTU/YR NET DOLLAR SAVINGS \$987 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6939-BARRACKS
AREA: STAIRWELLS & HALLWAYS

LAMP USE: 24
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS		
LAMPS @	60	WATTS =	0	WATTS		
15 LAMPS @	75	WATTS =	1125	WATTS		
LAMPS @	90	WATTS =	0	WATTS		
LAMPS @	150	WATTS =	0	WATTS		

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS		
15 LAMPS @	18	WATTS =	270	WATTS		
0 LAMPS @	26	WATTS =	0	WATTS		

BASELINE ENERGY CONSUMPTION	9,828 KWH	ECO ENERGY CONSUMPTION	270 KWH
	35,381 MJ		972 MJ
BASELINE DEMAND	1.13 KW	ECO DEMAND	0.27 KW

NET ENERGY SAVINGS	34,409 MJ/YR	NET DEMAND SAVINGS	\$121 /YR
NET ENERGY SAVINGS	33 MBTU/YR	NET DOLLAR SAVINGS	\$323 /YR


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=====
Estimate:      Bldg. 6939      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					89.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		32.40	\$0	\$890	\$0	\$0	\$890
0207082121	DEMO. 2X4' FLUOR FIXTURES					86.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		41.71	\$0	\$1,148	\$0	\$0	\$1,148
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					13.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		4.16	\$0	\$114	\$0	\$0	\$114
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					15.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.87	\$0	\$107	\$0	\$0	\$107
U02 SITEWORK		83	\$0	\$2,259	\$0	\$0	\$2,259

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE				0.00 EA	
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS				49.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	68.80	\$4,312	\$1,887	\$0	\$0	\$6,199
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS				21.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	31.71	\$1,764	\$872	\$0	\$0	\$2,636
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS				24.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	38.40	\$2,160	\$1,056	\$0	\$0	\$3,216
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS				41.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	69.70	\$3,854	\$1,927	\$0	\$0	\$5,781
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS				40.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	45.60	\$2,920	\$1,260	\$0	\$0	\$4,180
1661309909	SUR FLUOR 1X4' W 2 32W T8				13.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	14.82	\$1,118	\$410	\$0	\$0	\$1,528
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR				0.00 EA	
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8				0.00 EA	
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD				12.00 EA	
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	3.00 EA	53.00
Totals	3.00	\$77	\$83	\$0	\$0	\$160

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=====
Line #      Description
-----
      Manhours   Matl     Labor   Equipment   Sub     Total
=====
U16 ELECTRICAL      279    $16,331    $7,660         $0         $0    $23,991

ESTIMATE TOTAL      362    $16,331    $9,919         $0         $0    $26,250

SALES TAX           5.00%         $817
MATL MARKUP        -40.00%    ($6,532)
LABOR MARKUP       -13.40%    ($1,329)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $10,615    $8,590         $0         $0    $19,205
CONTINGENCY          10.00%         $1,921
BOND                  2.50%         $480
PROFIT               10.00%         $1,921

JOB TOTAL                                     $23,526
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=====
Estimate:      Bldg. 6939      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
              Manhours   Matl      Labor    Equipment    Sub      Total
=====
U02 SITEWORK          83          $0      $2,259          $0          $0      $2,259
U16 ELECTRICAL       279      $16,331      $7,660          $0          $0      $23,991
TOTAL                 362      $16,331      $9,919          $0          $0      $26,250

SALES TAX              5.00%          $817
MATL MARKUP           -40.00%      ($6,532)
LABOR MARKUP          -13.40%          ($1,329)
EQUIPT MARKUP          0.00%          $0
SUB MARKUP             0.00%          $0

TOTAL BEFORE CONTINGENC $10,615      $8,590          $0          $0      $19,205
CONTINGENCY            10.00%          $1,921
BOND                    2.50%          $480
PROFIT                  10.00%          $1,921
JOB TOTAL                                     $23,526

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6940		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	8	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
ENERGY CHARGE
DEMAND CHARGE

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS	2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	2 LAMP @	92 W/FIXT =	0 WATTS		0 2 LAMP @	58 W/FIXT =	0 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS		0 3 LAMP @	87 W/FIXT =	0 WATTS
	5 4 LAMP @	184 W/FIXT =	920 WATTS		5 4 LAMP @	118 W/FIXT =	590 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	2,679 KWH/YR	ECO ENERGY CONSUMPTION	1,718 KWH/YR
	9,645 MJ/YR		6,185 MJ/YR
BASELINE DEMAND	0.92 KW	ECO DEMAND	0.59 KW

NET ENERGY SAVINGS	3,459 MJ/YR	NET DEMAND SAVINGS	\$47 /YR
NET ENERGY SAVINGS	3 MBTU/YR	NET DOLLAR SAVINGS	\$67 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6940
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 9 2 LAMP U 92 W/FIXT = 828 WATTS 9 2 LAMP U @ 58 W/FIXT = 522 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 2 LAMP @ 92 W/FIXT = 0 WATTS 0 2 LAMP @ 58 W/FIXT = 0 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 82 4 LAMP @ 184 W/FIXT = 15,088 WATTS 82 4 LAMP @ 118 W/FIXT = 9,676 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 69,521 KWH/YR ECO ENERGY CONSUMPTION 44,545 KWH/YR
 250,276 MJ/YR 160,362 MJ/YR
 BASELINE DEMAND 15.92 KW ECO DEMAND 10.20 KW

NET ENERGY SAVINGS 89,914 MJ/YR NET DEMAND SAVINGS \$808 /YR
 NET ENERGY SAVINGS 85 MBTU/YR NET DOLLAR SAVINGS \$1,336 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6940
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 50 2 LAMP U 92 W/FIXT = 4,600 WATTS 50 2 LAMP U @ 58 W/FIXT = 2,900 WATTS

4 FOOT 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 40 2 LAMP @ 92 W/FIXT = 3,680 WATTS 40 2 LAMP @ 58 W/FIXT = 2,320 WATTS
 3 LAMP @ 137 W/FIXT = 0 WATTS 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 4 LAMP @ 184 W/FIXT = 0 WATTS 0 4 LAMP @ 118 W/FIXT = 0 WATTS

8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 72,334 KWH/YR ECO ENERGY CONSUMPTION 45,602 KWH/YR
 260,403 MJ/YR 164,167 MJ/YR
 BASELINE DEMAND 8.28 KW ECO DEMAND 5.22 KW

NET ENERGY SAVINGS 96,236 MJ/YR NET DEMAND SAVINGS \$433 /YR
 NET ENERGY SAVINGS 91 MBTU/YR NET DOLLAR SAVINGS \$998 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6940-BARRACKS

AREA: OFFICE

LAMP USE: 12

DAYS/WEEK: 7

PEAK USE: 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS	
LAMPS @	60	WATTS =	0	WATTS	
1 LAMPS @	75	WATTS =	75	WATTS	
LAMPS @	90	WATTS =	0	WATTS	
LAMPS @	150	WATTS =	0	WATTS	

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	0	WATTS =	0	WATTS	
1 LAMPS @	18	WATTS =	18	WATTS	
0 LAMPS @	26	WATTS =	0	WATTS	

BASELINE ENERGY CONSUMPTION

328 KWH
1,179 MJ

ECO ENERGY CONSUMPTION

18 KWH
65 MJ

BASELINE DEMAND

0.08 KW

ECO DEMAND

0.02 KW

NET ENERGY SAVINGS

1,115 MJ/YR

NET DEMAND SAVINGS

\$8 /YR

NET ENERGY SAVINGS

1 MBTU/YR

NET DOLLAR SAVINGS

\$15 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6940-BARRACKS

AREA: STAIRWELLS

LAMP USE: 24

HOURS/DAY: 7

DAYS/WEEK: 1 (1-YES, 2-NO)

PEAK USE

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	150	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH

28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH

778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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Estimate:      Bldg. 6940          Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study    Bid Date:
Location:       Ft. Campbell      Job #:
Sq. footage:    City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					99.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		36.04	\$0	\$990	\$0	\$0	\$990
0207082121	DEMO. 2X4' FLUOR FIXTURES					87.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		42.20	\$0	\$1,161	\$0	\$0	\$1,161
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					13.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.35	\$0	\$92	\$0	\$0	\$92
U02 SITEWORK		82	\$0	\$2,243	\$0	\$0	\$2,243

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA
Unit values	1.00	185.00	27.50	0.00	0.00	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					59.00 EA
Unit values	1.40	88.00	38.50	0.00	0.00	126.50
Totals	82.84	\$5,192	\$2,272	\$0	\$0	\$7,464
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.51	84.00	41.50	0.00	0.00	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA
Unit values	1.60	90.00	44.00	0.00	0.00	134.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					87.00 EA
Unit values	1.70	94.00	47.00	0.00	0.00	141.00
Totals	147.90	\$8,178	\$4,089	\$0	\$0	\$12,267
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					40.00 EA
Unit values	1.14	73.00	31.50	0.00	0.00	104.50
Totals	45.60	\$2,920	\$1,260	\$0	\$0	\$4,180
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.14	86.00	31.50	0.00	0.00	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA
Unit values	1.14	90.00	31.50	0.00	0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA
Unit values	1.40	89.00	38.50	0.00	0.00	127.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA
Unit values	0.50	10.50	13.75	0.00	0.00	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	1.00 EA 0.00	53.00
Totals	1.00	\$26	\$28	\$0	\$0	\$54

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		284	\$16,442	\$7,814	\$0	\$0	\$24,256
ESTIMATE TOTAL		366	\$16,442	\$10,057	\$0	\$0	\$26,499
SALES TAX	5.00%		\$822				
MATL MARKUP	-40.00%		(\$6,577)				
LABOR MARKUP	-13.40%			(\$1,348)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$10,687	\$8,709	\$0	\$0	\$19,397
CONTINGENCY	10.00%						\$1,940
BOND	2.50%						\$485
PROFIT	10.00%						\$1,940
JOB TOTAL							\$23,761

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Estimate:      Bldg. 6940      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
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SUMMARY

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              Manhours   Matl      Labor    Equipment    Sub      Total
=====
U02 SITEWORK           82          $0      $2,243          $0          $0      $2,243
U16 ELECTRICAL        284      $16,442      $7,814          $0          $0      $24,256
TOTAL                  366      $16,442      $10,057          $0          $0      $26,499

SALES TAX              5.00%          $822
MATL MARKUP            -40.00%      ($6,577)
LABOR MARKUP           -13.40%          ($1,348)
EQUIPT MARKUP          0.00%          $0
SUB MARKUP             0.00%          $0

TOTAL BEFORE CONTINGENC $10,687      $8,709          $0          $0      $19,397
CONTINGENCY            10.00%          $1,940
BOND                   2.50%          $485
PROFIT                 10.00%          $1,940
JOB TOTAL                                     $23,761

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19 AUGUST 1994

BUILDING #: 6943
AREA: BARRACKS

<u>ELECTRIC COSTS:</u>	
ENERGY CHARGE	\$0.0211 PER KWH
DEMAND CHARGE	<u>\$11.78 PER KW</u>

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

2 FOOT

2 LAMP U 92 W/FIXT = 0 WATTS

5-

0.2 LAMP U @ 58 W EXT # 0 WATTS

4 FOOT

1 LAMP @	45 W/FXT =	0 WATTS
2 2 LAMP @	92 W/FXT =	184 WATTS
3 LAMP @	137 W/FXT =	0 WATTS
4 LAMP @	184 W/FXT =	0 WATTS

4 FOOT

1 LAMP @	29 W/FIXT =	0 WATTS
2 LAMP @	58 W/FIXT =	116 WATTS
3 LAMP @	87 W/FIXT =	0 WATTS
4 LAMP @	118 W/FIXT =	0 WATTS

8 FOOT

2 LAMP @ 180 W/FIXT = 0 WATTS

8 FOOT

0.2 AMP @ 125 WEXT # 0 WATTS

BASELINE ENERGY CONSUMPTION

ECO ENERGY CONSUMPTION

338 KWHNLVB

1,929 MJ/YR

1.216 M-11A

0.18 KW

0.12 KW

0.12 KW

0.12 KW

NET ENERGY SAVINGS

713 MJJR

NET DEMAND SAVINGS

NET ENERGY SAVINGS

1 MARTIN

NET DOLLAR SAVINGS

NY 614
NY 614

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6943
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS
	26 2 LAMP @	92 W/FIXT =	2,392 WATTS
	36 3 LAMP @	137 W/FIXT =	4,932 WATTS
	48 4 LAMP @	184 W/FIXT =	8,832 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	26 2 LAMP @	58 W/FIXT =	1,508 WATTS
	36 3 LAMP @	87 W/FIXT =	3,132 WATTS
	48 4 LAMP @	118 W/FIXT =	5,664 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	70,569 KWH/YR	ECO ENERGY CONSUMPTION	45,008 KWH/YR
	254,050 MJ/YR		162,028 MJ/YR
BASELINE DEMAND	16.16 KW	ECO DEMAND	10.30 KW

NET ENERGY SAVINGS	92,022 MJ/YR	NET DEMAND SAVINGS	\$827 /YR
NET ENERGY SAVINGS	87 MBTU/YR	NET DOLLAR SAVINGS	\$1,368 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6943
 AREA: BARRACKS
 AREA USE: 24
 HOURS/DAY 7
 DAYS/WEEK
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
40 2 LAMP U	92 W/FIXT = 3,680 WATTS	40 2 LAMP U @	58 W/FIXT = 2,320 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
40 2 LAMP @	92 W/FIXT = 3,680 WATTS	40 2 LAMP @	58 W/FIXT = 2,320 WATTS
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS
4 LAMP @	184 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 64,297 KWH/YR ECO ENERGY CONSUMPTION 40,535 KWH/YR
 231,469 MJ/YR 145,926 MJ/YR

ECO DEMAND 4.64 KW

NET ENERGY SAVINGS 85,543 MJ/YR NET DEMAND SAVINGS \$384 /YR
 NET ENERGY SAVINGS 81 MBTU/YR NET DOLLAR SAVINGS \$887 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6943-BARRACKS
 AREA: RESTROOMS
 LAMP USE: 8
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 120
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS
 4 LAMPS @ 60 WATTS = 240 WATTS
 LAMPS @ 75 WATTS = 0 WATTS
 LAMPS @ 90 WATTS = 0 WATTS
 LAMPS @ 150 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

4 LAMPS @ 13 WATTS = 52 WATTS
 0 LAMPS @ 18 WATTS = 0 WATTS
 0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

699 KWH
 2,516 MJ
 0.24 KW

ECO ENERGY CONSUMPTION

52 KWH
 187 MJ
 0.05 KW

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

2,328 MJ/YR
 2 MBTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$27 /YR
 \$40 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6943-BARRACKS
AREA: STAIRWELLS & HALLWAYS

LAMP USE: 24
HOURS/DAY
DAYS/WEEK 7
PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
10 LAMPS @	60	WATTS =	600	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	150	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

10 LAMPS @	13	WATTS =	130	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

13,104 KWH
47,174 MJ

ECO ENERGY CONSUMPTION

346 KWH
1,246 MJ

BASELINE DEMAND

1.50 KW

ECO DEMAND

0.35 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

45,928 MJ/YR
44 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$163 /YR
\$433 /YR

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Estimate:      Bldg. 6943      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					106.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		38.58	\$0	\$1,060	\$0	\$0	\$1,060
0207082121	DEMO. 2X4' FLUOR FIXTURES					86.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		41.71	\$0	\$1,148	\$0	\$0	\$1,148
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					0.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		0.00	\$0	\$0	\$0	\$0	\$0
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					26.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		6.71	\$0	\$185	\$0	\$0	\$185
U02 SITEWORK		87	\$0	\$2,393	\$0	\$0	\$2,393

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA	
Unit values	1.00	185.00		27.50	0.00	0.00	212.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					40.00 EA	
Unit values	1.40	88.00		38.50	0.00	0.00	126.50
Totals	56.16	\$3,520		\$1,540	\$0	\$0	\$5,060
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					2.00 EA	
Unit values	1.51	84.00		41.50	0.00	0.00	125.50
Totals	3.02	\$168		\$83	\$0	\$0	\$251
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					36.00 EA	
Unit values	1.60	90.00		44.00	0.00	0.00	134.00
Totals	57.60	\$3,240		\$1,584	\$0	\$0	\$4,824
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					48.00 EA	
Unit values	1.70	94.00		47.00	0.00	0.00	141.00
Totals	81.60	\$4,512		\$2,256	\$0	\$0	\$6,768
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					66.00 EA	
Unit values	1.14	73.00		31.50	0.00	0.00	104.50
Totals	75.24	\$4,818		\$2,079	\$0	\$0	\$6,897
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00		31.50	0.00	0.00	117.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values	1.14	90.00		31.50	0.00	0.00	121.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.40	89.00		38.50	0.00	0.00	127.50
Totals	0.00	\$0		\$0	\$0	\$0	\$0
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values	0.50	10.50		13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	14.00 EA 0.00	53.00
Totals	14.00	\$357	\$385	\$0	\$0	\$742

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Line #      Description
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      Manhours   Matl    Labor   Equipment   Sub    Total
=====
U16 ELECTRICAL      294    $16,741    $8,092         $0        $0    $24,833

ESTIMATE TOTAL      381    $16,741    $10,485         $0        $0    $27,226

SALES TAX           5.00%      $837
MATL MARKUP        -40.00%    ($6,696)
LABOR MARKUP       -13.40%          ($1,405)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $10,882    $9,080         $0        $0    $19,962
CONTINGENCY          10.00%          $1,996
BOND                  2.50%          $499
PROFIT               10.00%          $1,996

JOB TOTAL                                $24,453
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Estimate:      Bldg. 6943      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell   Job #:
Sq. footage:   City indx:
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SUMMARY

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              Manhours    Matl      Labor    Equipment    Sub      Total
=====
U02 SITEWORK          87          $0      $2,393          $0          $0      $2,393
U16 ELECTRICAL       294      $16,741      $8,092          $0          $0      $24,833
TOTAL                 381      $16,741      $10,485          $0          $0      $27,226

SALES TAX              5.00%          $837
MATL MARKUP           -40.00%      ($6,696)
LABOR MARKUP          -13.40%          ($1,405)
EQUIPT MARKUP          0.00%          $0
SUB MARKUP             0.00%          $0

TOTAL BEFORE CONTINGENC $10,882      $9,080          $0          $0      $19,962
CONTINGENCY            10.00%          $1,996
BOND                   2.50%          $499
PROFIT                 10.00%          $1,996
JOB TOTAL                                     $24,453

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6944
 AREA: BARRACKS
 AREA USE: _____
 HOURS/DAY: 8
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS
	2 LAMP @	92 W/FIXT =	0 WATTS	0 2 LAMP @	58 W/FIXT =	0 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0 WATTS
	13 4 LAMP @	184 W/FIXT =	2,392 WATTS	13 4 LAMP @	118 W/FIXT =	1,534 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	6,966 KWH/YR	ECO ENERGY CONSUMPTION	4,467 KWH/YR
BASELINE DEMAND	25,076 MJ/YR	ECO DEMAND	16,081 MJ/YR
	2.39 KW		1.53 KW

NET ENERGY SAVINGS	8,995 MJ/YR	NET DEMAND SAVINGS	\$121 /YR
NET ENERGY SAVINGS	9 MBTU/YR	NET DOLLAR SAVINGS	\$174 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6944
 AREA: BARRACKS
 AREA USE: 12
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT
 29 2 LAMP U 92 W/FIXT = 2,668 WATTS 29 2 LAMP U @ 58 W/FIXT = 1,682 WATTS

4 FOOT
 1 LAMP @ 45 W/FIXT = 0 WATTS 0 1 LAMP @ 29 W/FIXT = 0 WATTS
 30 2 LAMP @ 92 W/FIXT = 2,760 WATTS 30 2 LAMP @ 58 W/FIXT = 1,740 WATTS
 32 3 LAMP @ 137 W/FIXT = 4,384 WATTS 32 3 LAMP @ 87 W/FIXT = 2,784 WATTS
 31 4 LAMP @ 184 W/FIXT = 5,704 WATTS 31 4 LAMP @ 118 W/FIXT = 3,658 WATTS

8 FOOT
 2 LAMP @ 180 W/FIXT = 0 WATTS 0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION 67,774 KWH/YR ECO ENERGY CONSUMPTION 43,086 KWH/YR
 243,986 MJ/YR 155,109 MJ/YR
 BASELINE DEMAND 15.52 KW ECO DEMAND 9.86 KW

NET ENERGY SAVINGS 88,877 MJ/YR NET DEMAND SAVINGS \$799 YR
 NET ENERGY SAVINGS 84 MBTU/YR NET DOLLAR SAVINGS \$1,321 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6944		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

ELECTRIC COSTS:
 ENERGY CHARGE
 DEMAND CHARGE

EXISTING FIXTURE DATA

REPLACEMENT FIXTURE DATA

2 FOOT		2 FOOT	
46 2 LAMP U	92 W/FIXT = 4,232 WATTS	46 2 LAMP U @	58 W/FIXT = 2,668 WATTS
4 FOOT		4 FOOT	
1 LAMP @	45 W/FIXT = 0 WATTS	0 1 LAMP @	29 W/FIXT = 0 WATTS
40 2 LAMP @	92 W/FIXT = 3,680 WATTS	40 2 LAMP @	58 W/FIXT = 2,320 WATTS
3 LAMP @	137 W/FIXT = 0 WATTS	0 3 LAMP @	87 W/FIXT = 0 WATTS
4 LAMP @	184 W/FIXT = 0 WATTS	0 4 LAMP @	118 W/FIXT = 0 WATTS
8 FOOT		8 FOOT	
2 LAMP @	180 W/FIXT = 0 WATTS	0 2 LAMP @	125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION	69,119 KWH/YR	ECO ENERGY CONSUMPTION	43,575 KWH/YR
	248,829 MJ/YR		156,871 MJ/YR
BASELINE DEMAND	7.91 KW	ECO DEMAND	4.99 KW

NET ENERGY SAVINGS	91,959 MJ/YR	NET DEMAND SAVINGS	\$413 /YR
NET ENERGY SAVINGS	87 MBTUYR	NET DOLLAR SAVINGS	\$953 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6944-BARRACKS

AREA: OFFICES

LAMP USE:

HOURS/DAY 12

DAYS/WEEK 7

PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
1 LAMPS @	75	WATTS =	75	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	150	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
1 LAMPS @	18	WATTS =	18	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

328 KWH
1,179 MJ

ECO ENERGY CONSUMPTION

18 KWH
65 MJ

BASELINE DEMAND

0.08 KW

ECO DEMAND

0.02 KW

NET ENERGY SAVINGS

1,115 MJ/YR

NET DEMAND SAVINGS

\$8 /YR

NET ENERGY SAVINGS

1 MBTU/YR

NET DOLLAR SAVINGS

\$15 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6944-BARRACKS
AREA: STAIRWELLS

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

24

7

1 (1-YES, 2-NO)

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
12 LAMPS @	75	WATTS =	900	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	150	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
12 LAMPS @	18	WATTS =	216	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH
28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH
778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR

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Estimate:      Bldg. 6944      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					141.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		51.32	\$0	\$1,410	\$0	\$0	\$1,410
0207082121	DEMO. 2X4' FLUOR FIXTURES					76.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		36.86	\$0	\$1,015	\$0	\$0	\$1,015
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					30.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		9.60	\$0	\$264	\$0	\$0	\$264
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					13.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.35	\$0	\$92	\$0	\$0	\$92
U02 SITEWORK		102	\$0	\$2,781	\$0	\$0	\$2,781

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661307777	L.E.D. EXIT SIGN SINGLE FACE					
Unit values	1.00	185.00	27.50	0.00	0.00 EA	212.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					
Unit values	1.40	88.00	38.50	0.00	75.00 EA	126.50
Totals	105.30	\$6,600	\$2,888	\$0	\$0	\$9,488
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.51	84.00	41.50	0.00	0.00 EA	125.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					
Unit values	1.60	90.00	44.00	0.00	32.00 EA	134.00
Totals	51.20	\$2,880	\$1,408	\$0	\$0	\$4,288
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					
Unit values	1.70	94.00	47.00	0.00	44.00 EA	141.00
Totals	74.80	\$4,136	\$2,068	\$0	\$0	\$6,204
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.14	73.00	31.50	0.00	66.00 EA	104.50
Totals	75.24	\$4,818	\$2,079	\$0	\$0	\$6,897
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	0.00 EA	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	0.00 EA	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					
Unit values	1.40	89.00	38.50	0.00	30.00 EA	127.50
Totals	42.00	\$2,670	\$1,155	\$0	\$0	\$3,825
1661388040	COMP FLUOR LAMP, 26 W QUAD					
Unit values	0.50	10.50	13.75	0.00	12.00 EA	24.25

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MeansData for Lotus

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Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	1.00 EA 0.00	53.00
Totals	1.00	\$26	\$28	\$0	\$0	\$54

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=====
Line #      Description
-----
              Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      356    $21,256    $9,791         $0         $0    $31,047

ESTIMATE TOTAL      458    $21,256    $12,572         $0         $0    $33,828

SALES TAX           5.00%     $1,063
MATL MARKUP        -40.00%    ($8,502)
LABOR MARKUP       -13.40%         ($1,685)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC $13,816    $10,887         $0         $0    $24,704
CONTINGENCY          10.00%         $2,470
BOND                  2.50%         $618
PROFIT               10.00%         $2,470

JOB TOTAL                                     $30,262
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Estimate:      Bldg. 6944      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
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SUMMARY

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Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      102      $0    $2,781      $0      $0    $2,781
U16 ELECTRICAL    356    $21,256    $9,791      $0      $0    $31,047
TOTAL              458    $21,256    $12,572     $0      $0    $33,828

SALES TAX          5.00%    $1,063
MATL MARKUP        -40.00%   ($8,502)
LABOR MARKUP        -13.40%   ($1,685)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $13,816  $10,887     $0      $0    $24,704
CONTINGENCY          10.00%      $2,470
BOND                  2.50%      $618
PROFIT                10.00%      $2,470
JOB TOTAL                                $30,262

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 6945
 AREA: BARRACKS
 HOURS/DAY: 8
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	92 W/FIXT =	0 WATTS	0.2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0.1 LAMP @	29 W/FIXT =	0 WATTS
	36 2 LAMP @	92 W/FIXT =	3,312 WATTS	36 2 LAMP @	58 W/FIXT =	2,088 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS	0.3 LAMP @	87 W/FIXT =	0 WATTS
	3 4 LAMP @	184 W/FIXT =	552 WATTS	3 4 LAMP @	118 W/FIXT =	354 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0.2 LAMP @	125 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

BASELINE ENERGY CONSUMPTION	11,252 KWH/YR	ECO ENERGY CONSUMPTION	7,111 KWH/YR
BASELINE DEMAND	40,507 MJ/YR	ECO DEMAND	25,600 MJ/YR
	3.86 KW		2.44 KW

NET ENERGY SAVINGS 14,907 MJ/YR
 NET ENERGY SAVINGS 14 MBTU/YR
 NET DEMAND SAVINGS \$201 /YR
 NET DOLLAR SAVINGS \$289 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6945		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	12	ELECTRIC COSTS:	
DAYS/WEEK	7	ENERGY CHARGE	\$0.0211 PER KWH
		DEMAND CHARGE	\$11.78 PER KW
BUILDING VOLTAGE:	277		

EXISTING FIXTURE DATA

2 FOOT			
8 2 LAMP U	92 W/FIXT =	736 WATTS	8 2 LAMP U @ 58 W/FIXT = 464 WATTS
4 FOOT			
1 LAMP @	45 W/FIXT =	0 WATTS	0 1 LAMP @ 29 W/FIXT = 0 WATTS
42 2 LAMP @	92 W/FIXT =	3,864 WATTS	42 2 LAMP @ 58 W/FIXT = 2,436 WATTS
3 LAMP @	137 W/FIXT =	0 WATTS	0 3 LAMP @ 87 W/FIXT = 0 WATTS
18 4 LAMP @	184 W/FIXT =	3,312 WATTS	18 4 LAMP @ 118 W/FIXT = 2,124 WATTS
8 FOOT			
2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @ 125 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

BASLINE ENERGY CONSUMPTION	34,560 KWH/YR	ECO ENERGY CONSUMPTION	21,945 KWH/YR
	124,415 MJ/YR		79,001 MJ/YR
BASLINE DEMAND	7.91 KW	ECO DEMAND	5.02 KW

NET ENERGY SAVINGS	45,413 MJ/YR	NET DEMAND SAVINGS	\$408 /YR
NET ENERGY SAVINGS	43 MBTU/YR	NET DOLLAR SAVINGS	\$675 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	6945		
AREA:	BARRACKS		
AREA USE:			
HOURS/DAY	24	\$0.0211	PER KWH
DAYS/WEEK	7	\$11.78	PER KW
BUILDING VOLTAGE:	277		

REPLACEMENT FIXTURE DATA

2 FOOT	48 2 LAMP U	92 W/FIXT =	4,416 WATTS	48 2 LAMP U @	58 W/FIXT =	2,784 WATTS
4 FOOT	1 LAMP @	45 W/FIXT =	0 WATTS	0 1 LAMP @	29 W/FIXT =	0 WATTS
	40 2 LAMP @	92 W/FIXT =	3,680 WATTS	40 2 LAMP @	58 W/FIXT =	2,320 WATTS
	3 LAMP @	137 W/FIXT =	0 WATTS	0 3 LAMP @	87 W/FIXT =	0 WATTS
	4 LAMP @	184 W/FIXT =	0 WATTS	0 4 LAMP @	118 W/FIXT =	0 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	70,727 KWH/YR	ECO ENERGY CONSUMPTION	44,589 KWH/YR
	254,616 MJ/YR		160,519 MJ/YR
BASELINE DEMAND	8.10 KW	ECO DEMAND	5.10 KW

NET ENERGY SAVINGS	94,097 MJ/YR	NET DEMAND SAVINGS	\$423 /YR
NET ENERGY SAVINGS	89 MBTU/YR	NET DOLLAR SAVINGS	\$978 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6945-BARRACKS
AREA: RESTROOMS

LAMP USE: 8
HOURS/DAY 7
DAYS/WEEK 1 (1-YES, 2-NO)
PEAK USE

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
3 LAMPS @	75	WATTS =	225	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	150	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS @	13	WATTS =	0	WATTS
3 LAMPS @	18	WATTS =	54	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

655 KWH
2,359 MJ

ECO ENERGY CONSUMPTION

54 KWH
194 MJ

BASELINE DEMAND

0.23 KW

ECO DEMAND

0.05 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

2,164 MJ/YR
2 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$24 /YR
\$37 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 6945-BARRACKS

AREA: STAIRWELLS

LAMP USE:

HOURS/DAY

DAYS/WEEK

PEAK USE

24

7

1 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARG \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 0 WATTS

LAMPS @ 60 WATTS = 0 WATTS

12 LAMPS @ 75 WATTS = 900 WATTS

LAMPS @ 90 WATTS = 0 WATTS

LAMPS @ 150 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

0 LAMPS 13 WATTS = 0 WATTS

12 LAMPS 18 WATTS = 216 WATTS

0 LAMPS 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

7,862 KWH

28,305 MJ

ECO ENERGY CONSUMPTION

216 KWH

778 MJ

BASELINE DEMAND

0.90 KW

ECO DEMAND

0.22 KW

NET ENERGY SAVINGS

27,527 MJ/YR

NET DEMAND SAVINGS

\$97 /YR

NET ENERGY SAVINGS

26 MBTU/YR

NET DOLLAR SAVINGS

\$258 /YR


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Estimate:      Bldg. 6945      Date:      8 July 1994
Description:    Hammerhead Barracks
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2X2', 1X4' FLUOR FIXTURES					152.00 EA	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		55.33	\$0	\$1,520	\$0	\$0	\$1,520
0207082121	DEMO. 2X4' FLUOR FIXTURES					31.00 EA	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		15.04	\$0	\$414	\$0	\$0	\$414
0207082122	DEMO. STRIP/INDUST FLUOR FIXTURES					22.00 EA	
Unit values		0.32	0.00	8.80	0.00	0.00	8.80
Totals		7.04	\$0	\$194	\$0	\$0	\$194
0207082123	DEMO. INCAND FIXTURES/EXIT LIGHTS					15.00 EA	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		3.87	\$0	\$107	\$0	\$0	\$107
U02 SITEWORK		82	\$0	\$2,235	\$0	\$0	\$2,235

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661307777	L.E.D. EXIT SIGN SINGLE FACE					0.00 EA	
Unit values		1.00	185.00	27.50	0.00	0.00	212.50
Totals		0.00	\$0	\$0	\$0	\$0	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					56.00 EA	
Unit values		1.40	88.00	38.50	0.00	0.00	126.50
Totals		78.62	\$4,928	\$2,156	\$0	\$0	\$7,084
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values		1.51	84.00	41.50	0.00	0.00	125.50
Totals		0.00	\$0	\$0	\$0	\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values		1.60	90.00	44.00	0.00	0.00	134.00
Totals		0.00	\$0	\$0	\$0	\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					31.00 EA	
Unit values		1.70	94.00	47.00	0.00	0.00	141.00
Totals		52.70	\$2,914	\$1,457	\$0	\$0	\$4,371
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					96.00 EA	
Unit values		1.14	73.00	31.50	0.00	0.00	104.50
Totals		109.44	\$7,008	\$3,024	\$0	\$0	\$10,032
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values		1.14	86.00	31.50	0.00	0.00	117.50
Totals		0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					0.00 EA	
Unit values		1.14	90.00	31.50	0.00	0.00	121.50
Totals		0.00	\$0	\$0	\$0	\$0	\$0
1661309919	PEND FLUOR 1X4' W 2 32W T8					22.00 EA	
Unit values		1.40	89.00	38.50	0.00	0.00	127.50
Totals		30.80	\$1,958	\$847	\$0	\$0	\$2,805
1661388040	COMP FLUOR LAMP, 26 W QUAD					12.00 EA	
Unit values		0.50	10.50	13.75	0.00	0.00	24.25

25-Jul-94

MeansData for Lotus

Page 3

Totals	6.00	\$126	\$165	\$0	\$0	\$291
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL/CEILING					
Unit values	1.00	25.50	27.50	0.00	3.00 EA	53.00
Totals	3.00	\$77	\$83	\$0	\$0	\$160

```
=====
Line #      Description
-----
           Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      281    $17,011    $7,732           $0        $0    $24,743

ESTIMATE TOTAL      363    $17,011    $9,967           $0        $0    $26,978

SALES TAX           5.00%      $851
MATL MARKUP        -40.00%    ($6,804)
LABOR MARKUP       -13.40%    ($1,336)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $11,057    $8,631           $0        $0    $19,689
CONTINGENCY          10.00%
BOND                  2.50%
PROFIT                10.00%

JOB TOTAL                                     $24,119
=====
```

```

=====
Estimate:      Bldg. 6945      Date:      8 July 1994
Description:   Hammerhead Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

```

SUMMARY

```

-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      82      $0      $2,235      $0      $0      $2,235
U16 ELECTRICAL    281    $17,011    $7,732      $0      $0    $24,743
TOTAL             363    $17,011    $9,967      $0      $0    $26,978

SALES TAX          5.00%      $851
MATL MARKUP        -40.00%    ($6,804)
LABOR MARKUP        -13.40%    ($1,336)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $11,057    $8,631      $0      $0    $19,689
CONTINGENCY          10.00%
BOND                  2.50%
PROFIT                10.00%

JOB TOTAL                                     $24,119

```



MOTOROLA
Lighting Inc.



3 LAMPS

INPUT:
120 VOLTS AC 60 Hz



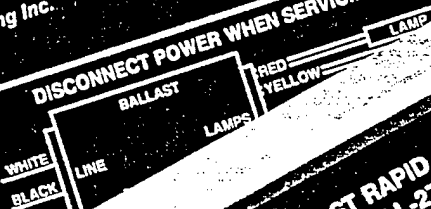
MOTOROLA
Lighting Inc.

ELECTRONIC BALLAST RAPID START
MODEL NO. M3-RN-T12-1LL-120
FOR SERVICE: 1-800-MLI-0089
BUFFALO GROVE, IL 60089

NO PCB'S



DISCONNECT POWER WHEN SERVICING



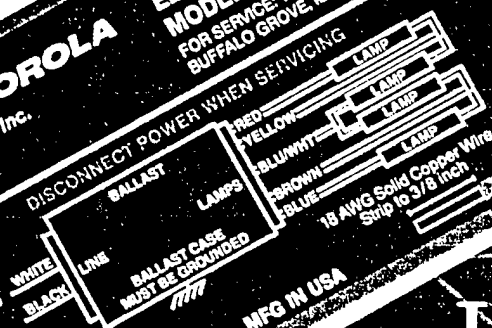
MOTOROLA
Lighting Inc.

ELECTRONIC BALLAST RAPID START
MODEL NO. M4-RN-T8-1LL-277
FOR SERVICE: 1-800-MLI-0089
BUFFALO GROVE, IL 60089

NO PCB'S



DISCONNECT POWER WHEN SERVICING



MFG IN USA



LISTED
1LS9

PATENT PENDING

CLASS P HIGH POWER FACTOR

LAMP TYPE
F027B
F027B

SOUND RATING: A
MIL STARTING TEMP
50° F
50° F

INSTALL IN ACCORDANCE WITH
NATIONAL AND LOCAL ELECTRICAL CODES

HIGH PERFORMANCE ELECTRONIC BALLASTS

FLUORESCENT 1, 2, 3 and 4 LAMP RAPID START

CUSTOMER SUPPORT
1-800-MLI-0089

HIGH PERFORMANCE FEATURES

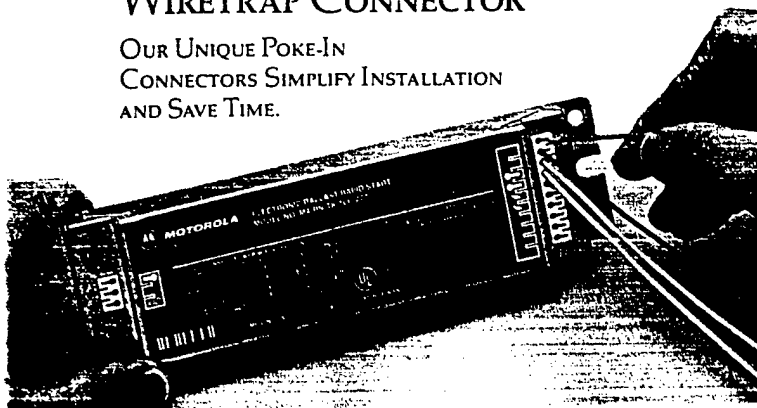
Power Factor:	Greater than .99
Total Harmonic Distortion:	Less than 10%
Third Harmonic Distortion:	Less than 6%
Lamp Current Crest Factor:	Less than 1.5
Lamp Current Frequency:	Greater than 25 KHz
Lamp Configuration:	Series
Lamp Flicker:	Less than 2%, Not Visible
Sound Rating:	Class A
Projected Life:	20 years plus
Connector:	Poke-in wire trap for 18 gauge (solid wire)
Weight:	1.2 lbs.
EMI:	Meets FCC Part 18, Subpart C

CODES

UL Listed: Class P
Transient Protection: Meets ANSI C62.41, Cat. A
(Formerly IEEE 587)

WIRETRAP CONNECTOR

OUR UNIQUE POKE-IN
CONNECTORS SIMPLIFY INSTALLATION
AND SAVE TIME.



PART NUMBER DESCRIPTION

MODEL NUMBER EXPLANATION

M 4 R N T8 1LL 277

Motorola Lighting Inc. Electronic Ballast	Lamp Type Number of Watts	Lamp Start Scenario R = Rapid Start	Light Output N = Normal	Voltage
				120

Type T8

QUALITY

Motorola's goal of acceptable quality is at Six Sigma or no more than 3.4 defects per million opportunities. Motorola Lighting Inc. designed its electronic ballast to meet the most rigorous performance standards at world class levels. This translates into a highly robust product that goes through extensive environmental stress testing to assure our customers of very low initial defect levels (less than 0.1%) and high reliability (greater than 500,000 hours Mean Time to Failure—MTTF).

The economic ballast life is 20 years when operated at 45°C ambient temperature. Operation of MLI's ballast at 50°C may derate life expectancy by 25%.

Six Sigma Quality means "world class" in all that we do at Motorola Lighting Inc., which is part of our commitment to TOTAL CUSTOMER SATISFACTION.



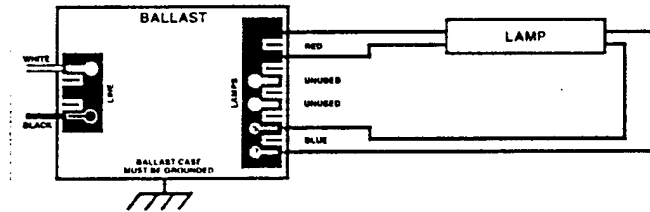
RAPID START BALLASTS

Lamp Type	Rated Lamp Wattage (W)	Lamp Length (FT)	Model No.	Line Voltage (V)	Max Line Current (A)	Typical Line Current (A)	Typical Input Power (W)		Min. Starting Temp (F)
							Open	Enclosed	
1 LAMP T8									
F32T8	32	4	M1-RN-T8-1LL-120	120	.31	.24	29	28	50°
F32T8	32	4	M1-RN-T8-1LL-277	277	.13	.11	29	28	50°
F25T8	25	3	M1-RN-T8-1LL-120	120	.24	.19	23	22	50°
F25T8	25	3	M1-RN-T8-1LL-277	277	.10	.08	23	22	50°
F17T8	17	2	M1-RN-T8-1LL-120	120	.17	.13	16	15	50°
F17T8	17	2	M1-RN-T8-1LL-277	277	.07	.08	16	15	50°
2 LAMP T8									
F32T8	32	4	M2-RN-T8-1LL-120	120	.55	.51	61	58	50°
F32T8	32	4	M2-RN-T8-1LL-277	277	.24	.21	59	56	50°
F25T8	25	3	M2-RN-T8-1LL-120	120	.42	.40	48	45	50°
F25T8	25	3	M2-RN-T8-1LL-277	277	.18	.17	46	44	50°
F17T8	17	2	M2-RN-T8-1LL-120	120	.27	.24	32	29	50°
F17T8	17	2	M2-RN-T8-1LL-277	277	.12	.10	34	31	50°
2 LAMP T12									
F40T12	40	4	M2-RN-T12-1LL-120	120	.64	.59	71	69	50°
F40T12	40	4	M2-RN-T12-1LL-277	277	.27	.25	69	67	50°
F40T12	34	4	M2-RN-T12-1LL-120	120	.54	.50	60	59	60°
F40T12	34	4	M2-RN-T12-1LL-277	277	.23	.21	58	57	60°
F40T10	40	4	M2-RN-T12-1LL-120	120	.64	.60	72	71	50°
F40T10	40	4	M2-RN-T12-1LL-277	277	.27	.25	70	69	50°
F30T12	30	3	M2-RN-T12-1LL-120	120	.48	.44	53	52	50°
F30T12	30	3	M2-RN-T12-1LL-277	277	.21	.19	52	50	50°
F30T12	25	3	M2-RN-T12-1LL-120	120	.40	.37	44	43	60°
F30T12	25	3	M2-RN-T12-1LL-277	277	.17	.16	43	42	60°
3 LAMP T8									
F32T8	32	4	M3-RN-T8-1LL-120	120	.78	.76	90	87	50°
F32T8	32	4	M3-RN-T8-1LL-277	277	.33	.32	89	85	50°
F25T8	25	3	M3-RN-T8-1LL-120	120	.61	.59	70	67	50°
F25T8	25	3	M3-RN-T8-1LL-277	277	.26	.25	69	66	50°
F17T8	17	2	M3-RN-T8-1LL-120	120	.39	.35	47	44	50°
F17T8	17	2	M3-RN-T8-1LL-277	277	.16	.14	44	41	50°
3 LAMP T12									
F40T12	40	4	M3-RN-T12-1LL-120	120	.92	.90	107	105	50°
F40T12	40	4	M3-RN-T12-1LL-277	277	.45	.38	105	103	50°
F40T12	34	4	M3-RN-T12-1LL-120	120	.84	.77	91	89	60°
F40T12	34	4	M3-RN-T12-1LL-277	277	.41	.33	90	88	60°
F40T10	40	4	M3-RN-T12-1LL-120	120	.99	.92	109	107	50°
F40T10	40	4	M3-RN-T12-1LL-277	277	.48	.39	107	105	50°
F30T12	30	3	M3-RN-T12-1LL-120	120	.76	.67	80	78	50°
F30T12	30	3	M3-RN-T12-1LL-277	277	.37	.29	78	76	50°
F30T12	25	3	M3-RN-T12-1LL-120	120	.71	.57	67	65	60°
F30T12	25	3	M3-RN-T12-1LL-277	277	.35	.24	66	64	60°
4 LAMP T8									
F32T8	32	4	M4-RN-T8-1LL-120	120	1.04	1.02	121	118	50°
F32T8	32	4	M4-RN-T8-1LL-277	277	.44	.43	118	115	50°
F25T8	25	3	M4-RN-T8-1LL-120	120	.81	.80	95	91	50°
F25T8	25	3	M4-RN-T8-1LL-277	277	.35	.34	93	90	50°
F17T8	17	2	M4-RN-T8-1LL-120	120	.55	.49	67	64	50°
F17T8	17	2	M4-RN-T8-1LL-277	277	.22	.19	61	58	50°

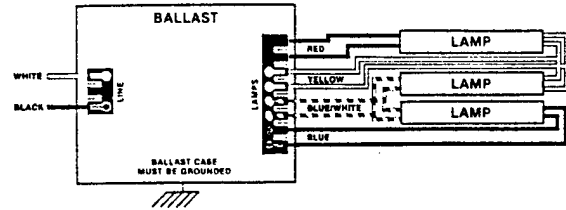
Ballast Will Operate the U-Shaped Equivalents of the Above Lamps. Test Data from Independent Test Lab Available on Request from Factory.

WIRING DIAGRAMS AND BALLAST DIMENSIONS

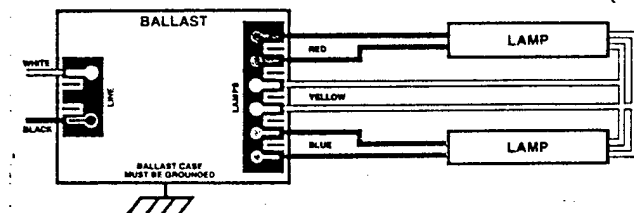
WIRING DIAGRAMS



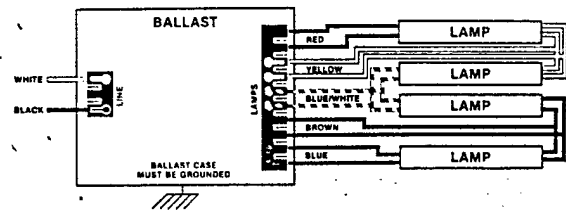
1 LAMP



3 LAMP

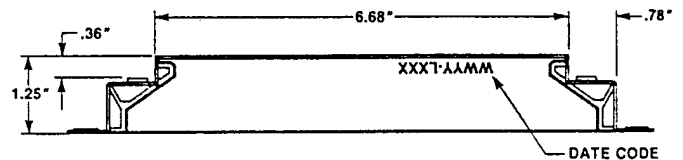
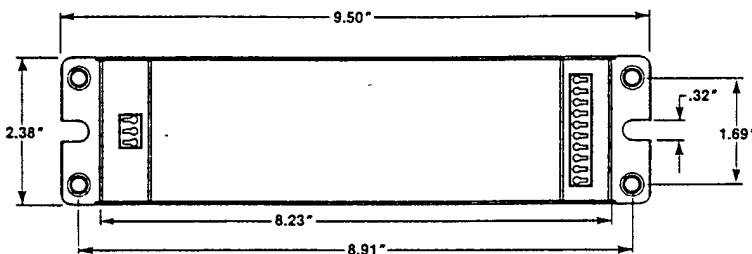


2 LAMP



4 LAMP

BALLAST DIMENSIONS*



*BALLAST IS SYMMETRICAL FOR MOUNTING PURPOSES



Our state-of-the-art manufacturing facility in Buffalo Grove, Illinois—in the U.S.A.

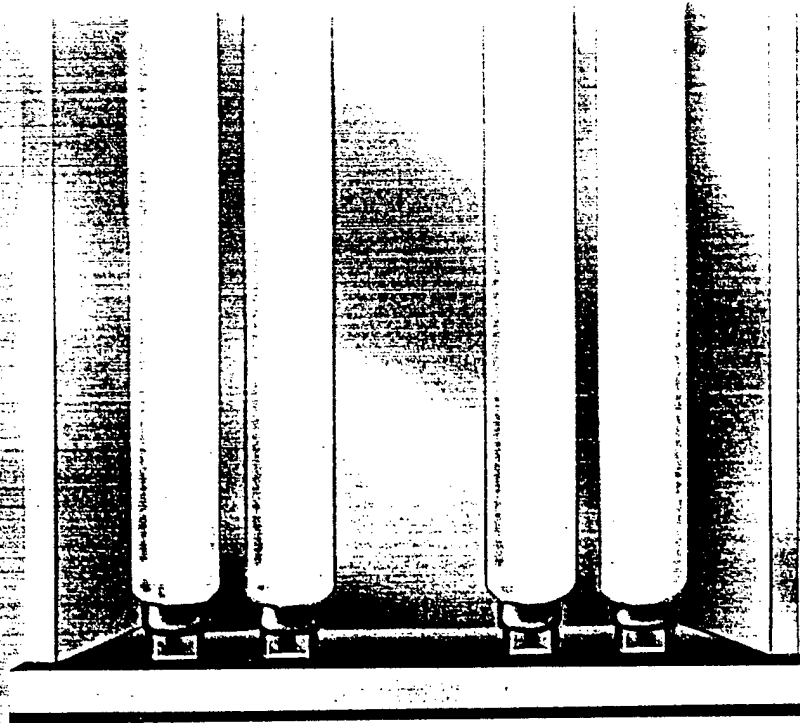


MOTOROLA
Lighting Inc.

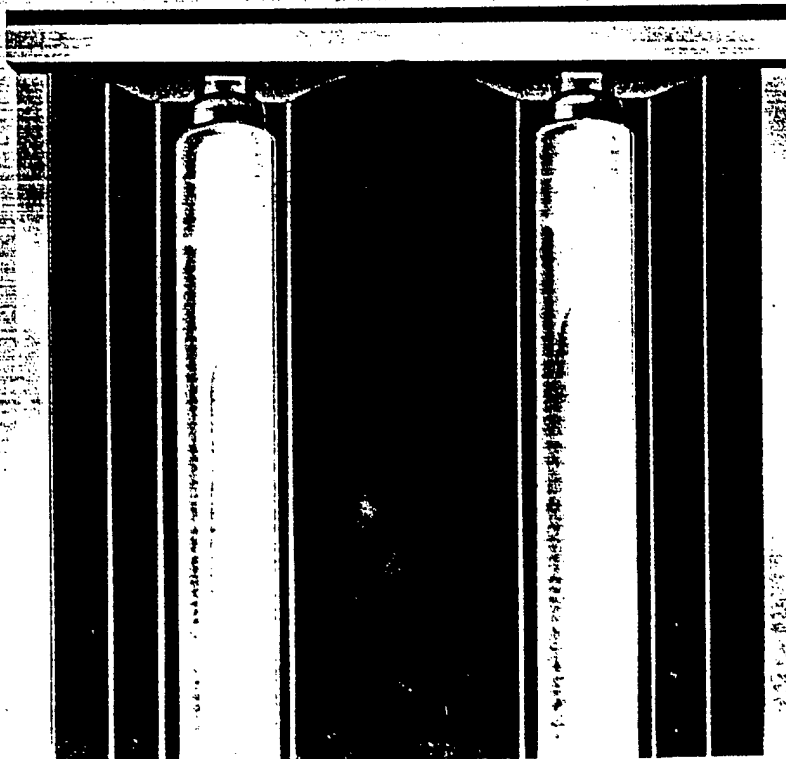
887 Deerfield Parkway
Buffalo Grove, IL 60089
1-800-MLI-0089

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Opportunity/Affirmative Action Employer



SILVERLUXTM REFLECTORS CUT YOUR LIGHTING ENERGY COSTS IN HALF



NOT YOUR LIGHTING LEVELS.

The energy saving outlook is bright.
Silverlux reflectors let you remove as many as half your fluorescent lamps, while maintaining optimum lighting levels and a "day-lamp" look. And when you cut the number of fluorescent lamps in half, you can also cut your energy costs in half.

Or Silverlux reflectors can actually deliver more light out of the same lamps—improving lighting levels dramatically—without increasing energy, lamp or ballast costs.

The payback—short, usually less than two years.
Direct savings in the form of lower lighting energy costs pay off quickly. Additional indirect savings such as lower lamp and ballast, lower maintenance costs, and lower air conditioning costs can accelerate payback even more.

Payback table

Number of lamps per foot	2000 hours per year (10 hours per day, 200 days/year)	4000 hours per year (20 hours per day, 200 days/year)	8000 hours per year (40 hours per day, 200 days/year)
1	\$1.00	\$2.00	\$4.00
2	\$0.50	\$1.00	\$2.00
3	\$0.33	\$0.67	\$1.33
4	\$0.25	\$0.50	\$1.00
5	\$0.20	\$0.40	\$0.80
6	\$0.17	\$0.33	\$0.67
7	\$0.14	\$0.29	\$0.57
8	\$0.13	\$0.25	\$0.50
9	\$0.11	\$0.22	\$0.44
10	\$0.10	\$0.20	\$0.40

Reflectivity and efficiency—the highest available.
After determining your exact lighting requirements, 3M computer-aided design software is used to custom engineer your reflectors for highest performance.

Part of that performance stems from the unique Silverlux film made by 3M. It has 95% greater reflectivity—the highest reflectivity on the market. This film is then laminated to specially pre-treated metal substrates—laminated with proven 3M adhesives. This adhesive expertise provides a strong film-to-substrate bonding, uniform appearance and exceptional performance year after year.

Reflective Surface	Specular Reflectivity	Total Reflectivity
Aluminum	50%	50%
Aluminum with Silverlux film	50%	70% to 90%
Aluminum with Silverlux film and adhesive	50%	70% to 90%
Aluminum with Silverlux film and adhesive and paint	50%	70% to 90%

From sophisticated computer control enters the accuracy and quality of your reflectors during the entire fabrication process.
It guarantees the reflectivity, the greater light delivery. The more light reflected into the work space, the more efficient the lighting system. And maximum efficiency means lower costs, lower energy bills, and a longer life. In short, the Silverlux reflector design and construction, coupled with our Silver film and proven adhesives, deliver today's most efficient future.

Front reflectivity maximizes lighting even more.

Our patented front reflective surface construction allows light to be reflected more directly from the surface of the reflector for greatest lighting efficiency.

What's more, a special non-yellowing acrylic coating protects the film from degradation due to ultraviolet light. A second similar coating prevents the silver from oxidizing or corroding. Result? Maximum performance over a longer life.

Silverlux reflectors are easy to install and maintain.

Lamps can be removed and fixtures refilled with no rewiring.

All fluorescent reflectors become dirty over time. Yet tests indicate that even without cleaning, Silverlux reflectors lose less than 3% of their reflectivity over a four-year period in normal office environments. Superior reflectivity can be maintained simply by cleaning reflectors with a mist of 2% liquid detergent in warm water and wiping with a soft cloth or sponge. After cleaning, reflectors return to 99% of their original reflectivity.

We'll even help finance your program.

Minnesota—a division of 3M—provides financing for customers who invest in 3M products such as Silverlux reflectors. Because Minnesota's primary function is to make it easier for customers to buy 3M products, financing rates are kept as low as possible.

EXAMPLE ONLY—

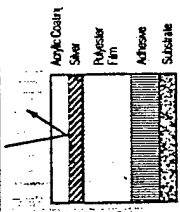
1717 reflectors @ \$53/unit installed = \$250,000

Minnesota Financing	
Amount financed	\$250,000
Term of agreement	36 months
Payment period	Monthly
Monthly payment	\$8,110
Monthly energy savings	\$14,743
Net monthly savings	\$6,633

Lease-purchase plans are available at fixed monthly charges, for periods ranging from one to three years. In effect, you're using your energy savings to pay for the installation.

Just as important, your entire purchase—Silverlux reflectors, installation and financing—can be handled by one person. Your 3M representative.

*Based on 10% finance rate. Savings depend on your actual operation, usage and power rates.



SILVERLUX FLUORESCENT REFLECTORS

- Cut energy costs in half or enhance lighting levels
- Pay for themselves in two years or less
- Install and maintain easily
- Warranted for 5 years
- Attractive low-rate financing available
- Available from nationwide dealer network

For more information just call.

3M is a part of the Green Lights Program—a voluntary, non-regulatory program organized by the Environmental Protection Agency (EPA). This program encourages corporations to take advantage of new lighting technologies and design principles that benefit the environment. 3M is a unique member of the program because it participates as both a consumer of electrical lighting energy and as a developer of electrical lighting products. Silverlux reflectors demonstrate 3M's commitment to energy-efficient lighting technologies that reduce energy consumption and pollution while delivering the same or better lighting.

Cut costs, not lighting.

Innovation working for you™

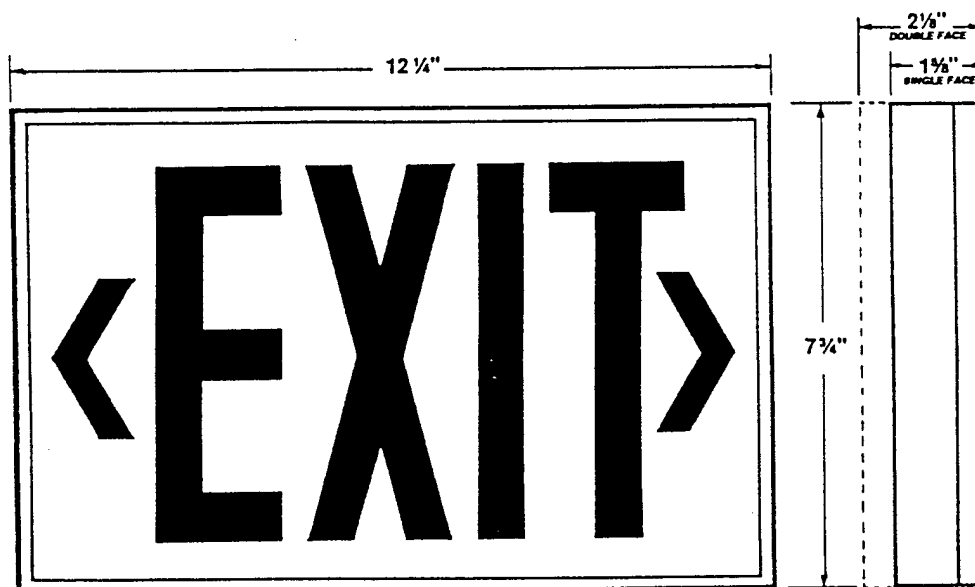
3M Construction Markets
3M Center Bldg. 225-4S-08
St. Paul, MN 55144-1000
612-736-2388

3M
PAGE 6-469

Evenlite LED Exit Lights

EV SERIES

The LED of the 21st Century



No Ifs, Ands or Buts.

This is exactly how the EVENLITE 2000 appears! Perfectly even illumination is produced by indirect lighting, so that the LED's are invisible, with no hot spots. All this is provided in the slimmest sign on the market with integral charger and battery.

No competitor comes close to these combined specifications:

- Less than 3 watts total power per face
- Perfect light distribution across face
- Single face only 1 5/8 " thick
- Double face only 2 1/8" thick
- Remote unit only 1/2" thick
- Multiple LED lamps with 20 year unconditional guarantee
- NICAD batteries with 5 year guarantee
- Aluminum housing for light weight and strength
- Universal mount
- Baked enamel, vinyl clad or satin anodized finishes
- Polycarbonate faceplate

Patent Pending



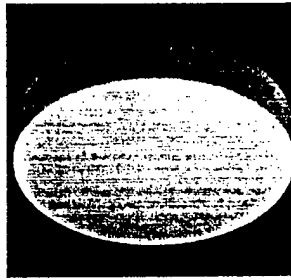
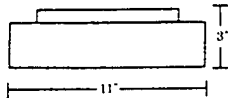
SHIELD SOURCE INCORPORATED
220 VFW Avenue, Grasonville, Maryland 21638
Tel.: (410) 827-6022 Fax: (410) 827-9657

PAGE 6-470

PIONEER

1011 Series

Economy!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

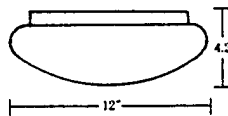
- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

MODEL#	WATTAGE	L	D
PI 1011	13,22,2X9,2X13	11"	3"
PI 1014	2X13,3X13,32,54	14"	3"

ECLIPSE

5012 Series

New!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

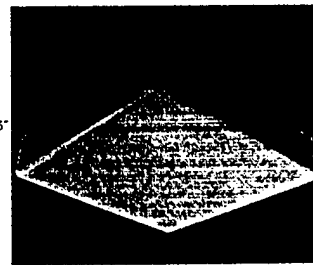
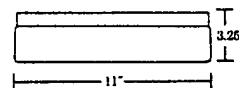
- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

MODEL#	WATTAGE	L	D
EC 5012	13,22,2X9,2X13	12"	4.25"
EC 5015	2X13,3X13,32,54	15"	4.25"

DISCOVERY

3011 Series

Traditional Square!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

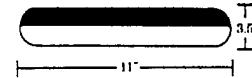
- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

MODEL#	WATTAGE	L	D
DS 3011	13,2X9,22,2X13	11"	3.25"
DS 3014	2X13,3X13,32,54	14"	3.25"

EXPLORER

910 Series

Low Profile!



UL Listed

STANDARD FEATURES

- White vandal resistant lexan lens.
- Black lexan housing.
- 120 volt class "P" ballast.
- White powder coated reflector.
- Lamp(s) included.

OPTIONS

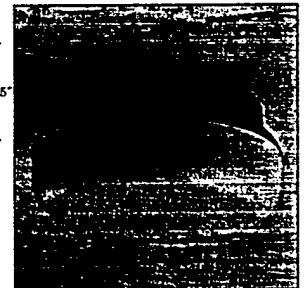
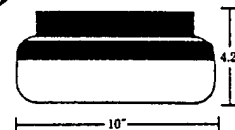
- High power factor ballast.
- 277 volt ballast.
- White lexan housing.

MODEL#	WATTAGE	L	D
EP 910	13, 2X9, 2X13	11"	3.5"

PLUTO

1303 Series

Vandal!



UL Listed

STANDARD FEATURES

- White heavy gauged lexan lens.
- Corrosion-proof lexan base.
- White powder coated reflector.
- Lamp(s) included.
- 120 volt class "P" ballast.

OPTIONS

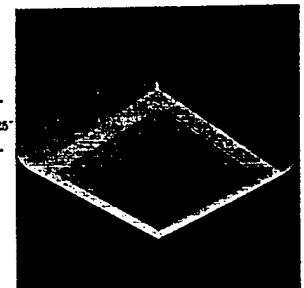
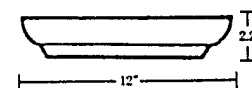
- High power factor ballast.
- 277 volt ballast.

MODEL#	WATTAGE	L	D
PLU 1303	13,22,2X9,2X13	10"	4.25"

COSMO

1400 Series

Low Profile!



UL Listed

STANDARD FEATURES

- White lexan lens.
- White vandal-proof lexan lens.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.

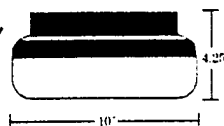
MODEL#	WATTAGE	L	D
CS 1400	13, 2X9, 2X13	12"	2.25"



UL Listed

ARMSTRONG

1302 Series
Vandal-Lite!



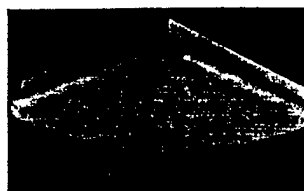
STANDARD FEATURES

- White heavy gauged lexan lens.
- Corrosion-proof lexan base.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.

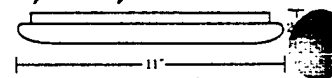
MODEL#	WATTAGE	L	D
AR 1302	13, 2X9, 22, 2X13	10"	4.25"



UL Listed

STRATUS

2011 Series
Low Profile Square!



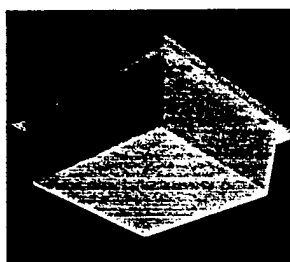
STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

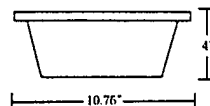
MODEL#	WATTAGE	L	D
ST 2011	13, 2X9, 22, 2X13	11"	2.75"
ST 2014	2X13, 3X13, 32, 54	14"	2.75"



UL Listed

CENTURY

1010 Series
Vandal-Lite!



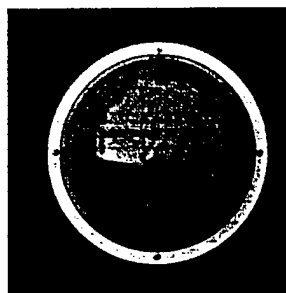
STANDARD FEATURES

- White extra strong lexan lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

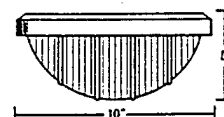
MODEL#	WATTAGE	L	D
CE 1010	13, 22, 2X13	10.75"	4"



UL Listed

NOVA

200 Series
Euro-Lite!



STANDARD FEATURES

- Opal polycarbonate diffuser.
- White corrosion-proof lexan base.
- White powder coated reflector.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- Black or white cage.
- Black lexan housing.
- Theft proof screws.

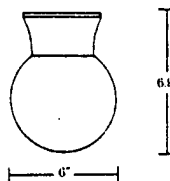
MODEL#	WATTAGE	L	D
NV 200	9, 13, 2X9	10"	5"



UL Listed

HALO

333 Series
Economy!



STANDARD FEATURES

- Durable polycarbonate base.
- Available in white or black.
- White 6" acrylic globe.
- 120 volt class "P" ballast.
- Lamp included.

OPTIONS

- Clear prismatic jar.
- White acrylic jar.
- HPF module.

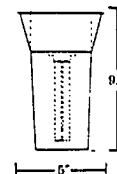
MODEL#	WATTAGE	L	D
HL 333 Globe	5, 7, 9Q, 13Q	6.9"	6"
HL 334 Jar	5, 7, 9	7.9"	4"
HL 334 Jar	13	8.9"	4"



UL Listed

KENNEDY

030 Series
Vandal-Lite!



STANDARD FEATURES

- Brushed satin cast aluminum housing.
- Durable white lexan jar.
- 120 volt class "P" ballast.
- Lamp included.

OPTIONS

- Clear prismatic jar.
- 6" round globe.
- High power factor ballast.
- Pull chain.

MODEL#	WATTAGE	L	D
KD 030 Jar	5, 7, 9, 13	9.5"	5"
KD 031 Globe	7, 9Q, 13Q	9.5"	5"

CESAM-EN-CM
CEORL-ED-M-S

January 1993
February 15, 1994

GENERAL SCOPE OF WORK

FOR A

LIGHTING ENERGY STUDY

FORT CAMPBELL, KY- a. 52 Airfield Buildings
b. Blanchfield Army Community Hospital
c. 47 Korean War Barracks

Performed as part of the

ENERGY ENGINEERING ANALYSIS PROGRAM (EEAP)

FORT CAMPBELL, KY
SCOPE OF WORK
FOR A
LIGHTING ENERGY STUDY

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ANNEXES

- A - DETAILED SCOPE OF WORK
 - B - EXECUTIVE SUMMARY GUIDELINE
 - C - REQUIRED DD FORM 1391 DATA
- GLOSSARY OF ACCRONYMS

1. BRIEF DESCRIPTION OF WORK: The Architect-Engineer (A/E) shall:

1.1 Review previously completed Energy Engineering Analysis Program (EEAP) study which applies to the specific building, system, or energy conservation opportunity (ECO) covered by this study, if any had been done.

1.2 Perform a lighting site survey of specific buildings or areas to collect all data required to evaluate the specific ECOs included in this study.

1.3 Reevaluate the specific project or ECO from the previous study, if any were done, to determine its economic feasibility based on revised criteria, current site conditions and technical applicability.

1.4 Evaluate specific ECOs to determine their energy savings potential and economic feasibility.

1.5 Provide project documentation for recommended ECOs as detailed herein.

1.6 Prepare a comprehensive report to document all work performed, the results and all recommendations.

2. GENERAL

2.1 This study is limited to the evaluation of the specific buildings, systems, or ECOs listed in Annex A, DETAILED SCOPE OF WORK.

2.2 The information and analysis outlined herein are considered to be minimum requirements for adequate performance of this study.

2.3 For the buildings, systems or ECOs listed in Annex A, all methods of energy conservation which are reasonable and practical shall be considered, including improvements of operational methods and procedures as well as the physical facilities. All energy conservation opportunities which produce energy or dollar savings shall be documented in this report. Any energy conservation opportunity considered infeasible shall also be documented in the report with reasons for elimination.

2.4 The study shall consider the use of all energy sources applicable to each building, system, or ECO.

2.5 The "Energy Conservation Investment Program (ECIP) Guidance", described in letter from AFPI-ENO, dated 20 JAN 1994 and the latest revision from CEHSC-FU establishes criteria for ECIP projects and shall be used for performing the economic analyses

of all ECOs and projects. The program, Life Cycle Cost In Design (LCCID), has been developed for performing life cycle cost calculations in accordance with ECIP guidelines and is referenced in the ECIP Guidance. If any program other than LCCID is proposed for life cycle cost analysis (LCCA), it must use the mode of calculation specified in the ECIP Guidance. The output must be in the format of the ECIP LCCA summary sheet, and it must be submitted for approval to the Contracting Officer.

2.6 Energy conservation opportunities determined to be technically and economically feasible shall be developed into projects acceptable to installation personnel. This may involve combining similar ECOs into larger packages which will qualify for ECIP, MCA, or PCIP funding, and determining in coordination with installation personnel the appropriate packaging and implementation approach for all feasible ECOs.

2.6.1 Projects which qualify for ECIP funding shall be identified, separately listed, and prioritized by the Savings to Investment Ratio (SIR).

2.6.2 All feasible non-ECIP projects shall be ranked in order of highest to lowest SIR.

2.6.3 At some installations Energy Conservation and Management (ECAM) funding will be used instead of ECIP funding. The criteria for each program is the same. The Director of Engineering and Housing will indicate which program is used at this installation. This Scope of Work mentions only ECIP, however, ECAM is also meant.

3. PROJECT MANAGEMENT

3.1 Project Managers. The A/E shall designate a project manager to serve as a point of contact and liaison for work required under this contract. Upon award of this contract, the individual shall be immediately designated in writing. The A/E's designated project manager shall be approved by the Contracting Officer prior to commencement of work. This designated individual shall be responsible for coordination of work required under this contract. The Contracting Officer will designate a project manager to serve as the Government's point of contact and liaison for all work required under this contract.

3.2 Installation Assistance. The Commanding Officer or authorized representative at the installation will designate an individual to assist the A/E in obtaining information and establishing contacts necessary to accomplish the work required under this contract. This individual will be the installation representative.

3.3 Public Disclosures. The A/E shall make no public

announcements or disclosures relative to information contained or developed in this contract, except as authorized by the Contracting Officer.

3.4 Meetings. Meetings will be scheduled whenever requested by the AE or the Contracting Officer for the resolution of questions or problems encountered in the performance of the work. The A/E's project manager and the Government's representative shall be required to attend and participate in all meetings pertinent to the work required under this contract as directed by the Contracting Officer. These meetings, if necessary, are in addition to the presentation and review conferences.

3.5 Site Visits, Inspections, and Investigations. The A/E shall visit and inspect/investigate the site of the project as necessary and required during the preparation and accomplishment of the work.

3.6 Records

3.6.1 The A/E shall provide a record of all significant conferences, meetings, discussions, verbal directions, telephone conversations, etc., with Government representative(s) relative to this contract in which the A/E and/or designated representative(s) thereof participated. These records shall be dated and shall identify the contract number, and modification number if applicable, participating personnel, subject discussed and conclusions reached. The A/E shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the records.

3.6.2 The A/E shall provide a record of requests for and/or receipt of Government-furnished material, data, documents, information, etc., which if not furnished in a timely manner, would significantly impair the normal progression of the work under this contract. The records shall be dated and shall identify the contract number and modification number, if applicable. The A/E shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the record of request or receipt of material.

3.7 Interviews. The A/E and the Government's representative shall conduct entry and exit interviews with the Department of Public Works (DPW) before starting work at the installation and after completion of the field work. The Government's representative shall schedule the interviews at least one week in advance.

3.7.1 Entry. The entry interview shall describe the intended procedures for the survey and shall be conducted prior to commencing work at the facility. As a minimum, the interview shall cover the following points:

- a. Schedules.
- b. Names of energy analysts who will be conducting the site survey.
- c. Proposed working hours.
- d. Support requirements from the Department of Public Works.

3.7.2 Exit. The exit interview shall briefly describe the items surveyed and probable areas of energy conservation. The interview shall also solicit input and advice from the DPW.

4. SERVICES AND MATERIALS. All services, materials (except those specifically enumerated to be furnished by the Government), plant, labor, supervision and travel necessary to perform the work and render the data required under this contract are included in the lump sum price of the contract.

5. PROJECT DOCUMENTATION. All ECOs which the A/E has considered shall be included in one of the following categories and presented in the report as such:

5.1 ECIP Projects. To qualify as an ECIP project, an ECO, or several ECOs which have been combined, must have a construction cost estimate greater than \$300,000, a Savings to Investment Ratio (SIR) greater than one and a simple payback period of less than ten years. For ECAM projects, the \$300,000 limitation may not apply; in such cases, the AE shall check with the installation for guidance. The overall project and each discrete part of the project shall have an SIR greater than one. All projects meeting the above criteria shall be arranged as specified in paragraph 2.7.1 and shall be provided with programming documentation. Programming documentation shall consist of a DD Form 1391, life cycle cost analysis (LCCA) summary sheet(s) (with necessary backup data to verify the numbers presented), and a Project Development Brochure (PDB). A LCCA summary sheet shall be developed for each ECO and for the overall project when more than one ECO are combined. The energy savings for projects consisting of multiple ECOs must take into account the synergistic effects of the individual ECOs. For projects and ECOs reevaluated from previous studies, the backup data shall consist of copies of the original calculations and analysis, with new pages revising the original calculations and analysis. In addition, the backup data shall include as much of the following as is available: the increment of work under which the project or ECO was developed in the previous study, title(s) of the project(s), the energy to cost (E/C) ratio, the benefit to cost (B/C) ratio, the current working estimate (CWE), and the payback period. The purpose of this information is to provide a means to prevent duplication of projects in any future reports.

5.2 Non-ECIP Projects. Projects which do not meet ECIP criteria with regard to cost estimate or payback period, but which have an SIR greater than one shall be documented. Projects or ECOs in this category shall be arranged as specified in paragraph 2.6.2 and shall be provided with the following documentation: the LCCA summary sheet completely filled out, a description of the work to be accomplished, backup data for the LCCA, ie, energy savings calculations and cost estimate(s), and the simple payback period. The energy savings for projects consisting of multiple ECOs must take into account the synergistic effects of the individual ECOs. In addition these projects shall have the necessary documentation prepared, as required by the Government's representative, for one of the following categories:

a. Quick Return on Investment Program (QRIP). This program is for projects which have a total cost greater than \$3,000 but less than \$100,000 and a simple payback period of two years or less.

b. Productivity Enhancing Capital Investment Program (PE-CIP). This program is for projects which have a total cost of greater than \$3,000 but less than \$100,000 and a simple payback period of four years or less.

c. OSD Productivity Investment Funding (OSD PIF). This program is for projects which have a total cost of more than \$100,000 and a simple payback period of four years or less.

The above programs and the required documentation forms are all described in detail in AR 5-4, Change No. 1.

d. Regular Military Construction Army (MCA) Program. This program is for projects which have a total cost greater than \$300,000 and a simple payback period of four to twenty-five years. Documentation shall consist of DD Form 1391 and a PDB.

e. Low Cost/No Cost Projects. These are projects which the DEH can perform using his resources. Documentation shall be as required by the DEH.

5.3 Nonfeasible ECOs. All ECOs which the AE has considered but which are not feasible, shall be documented in the report with reasons and justifications showing why they were rejected.

6. DETAILED SCOPE OF WORK. The Detailed Scope of Work is contained in Annex A.

7. WORK TO BE ACCOMPLISHED.

7.1 Review Previous Studies. Review the previous EEAP study which applies to the specific building, system, or ECO covered by

this study. This review should acquaint the AE with the work that has been performed previously. Much of the information the AE may need to develop the ECOs in this study may be contained in the previous study.

7.2 Perform a Lighting Site Survey. The A/E shall obtain all necessary data to evaluate the ECOs or projects by conducting a site survey. However, the A/E is encouraged to use any data that may have been documented in any previous study. The A/E shall document his site survey on forms developed for the survey, or standard forms, and submit these completed forms as part of the report. All test and/or measurement equipment shall be properly calibrated prior to its use.

7.3 Reevaluate Selected Projects. The A/E shall reevaluate the projects and ECOs listed in Annex A. These are projects and ECOs that the previous study has identified but that have not been accomplished or only parts have been accomplished. If the project or ECO is acceptable as is, that is, there are no changes to the basic project or ECO, the energy savings shown in the previous project may be accepted as accurate but the energy cost and construction cost estimates shall be updated based on the most current data available. With the above information the project shall then be analyzed based on current ECIP criteria. If the project or ECO is basically acceptable but some of the buildings in the original project have been deleted or new buildings can be added, the necessary changes shall be made to the energy savings, the energy costs and construction costs shall be updated, and the revised project or ECO shall then be analyzed using current ECIP guidance. If the original project or ECO has had numerous changes made to it so that all of the numbers are suspected of being inaccurate, but the project or ECO is still considered feasible, the AE shall develop the project from the beginning and analyze it with the current ECIP guidance. These projects shall be separately listed in the report.

7.4 Evaluate Selected ECOs. The A/E shall analyze the ECOs listed in Annex A. These ECOs shall be analyzed in detail to determine their feasibility. SIRs shall be determined using current ECIP guidance. The A/E shall provide all data and calculations needed to support the recommended ECO. All assumptions and engineering equations shall be clearly stated. Calculations shall be prepared showing how all numbers in the ECO were figured. Calculations shall be an orderly step-by-step progression from the first assumption to the final number. Descriptions of the products, manufacturers catalog cuts, pertinent drawings and sketches shall also be included. A LCCA summary sheet shall be prepared for each ECO and included as part of the supporting data.

7.5 Combine ECOs Into Recommended Projects. During the Interim Review Conference, as outlined in paragraph 7.6.1, the

A/E will be advised of the DEH's preferred packaging of recommended ECOs into projects for implementation. Some projects may be a combination of several ECOs, and others may contain only one. These projects will be evaluated and arranged as outlined in paragraphs 5.1, 5.2, and 5.3. Energy savings calculations shall take into account the synergistic effects of multiple ECOs within a project and the effects of one project upon another. The results of this effort will be reported in the Final Submittal per paragraph 7.6.2.

7.6 Submittals, Presentations and Reviews. The work accomplished shall be fully documented by a comprehensive report. The report shall have a table of contents and shall be indexed. Tabs and dividers shall clearly and distinctly divide sections, subsections, and appendices. All pages shall be numbered. Names of the persons primarily responsible for the project shall be included. The A/E shall give a formal presentation of the interim submittal to installation, command, and other Government personnel. Slides or view graphs showing the results of the study to date shall be used during the presentation. During the presentation, the personnel in attendance shall be given ample opportunity to ask questions and discuss any changes deemed necessary to the study. A review conference will be conducted the same day, following the presentation. Each comment presented at the review conference will be discussed and resolved or action items assigned. It is anticipated that the presentation and review conference will require approximately one working day. The presentation and review conference will be at the installation on the date agreeable to the DPW, the A/E and the Government's representative. The Contracting Officer may require a resubmittal of any document(s), if such document(s) are not approved because they are determined by the Contracting Officer to be inadequate for the intended purpose.

7.6.1 Interim Submittal. An interim report shall be submitted for review after the field survey has been completed and an analysis has been performed on all of the ECOs. The report shall indicate the work which has been accomplished to date, illustrate the methods and justifications of the approaches taken and contain a plan of the work remaining to complete the study. Calculations showing energy and dollar savings, SIR, and simple payback period of all the ECOs shall be included. The results of the ECO analyses shall be summarized by lists as follows:

a. All ECOs eliminated from consideration shall be grouped into one listing with reasons for their elimination as discussed in par 5.3.

b. All ECOs which were analyzed shall be grouped into two listings, recommended and non-recommended, each arranged in descending order SIR. These lists may be subdivided by building or area as appropriate for the study.

The A/E shall submit the Scope of Work and any modifications to the Scope of Work as an appendix to the report. A narrative summary describing the work and results to date shall be a part of this submittal. At the Interim Submittal and Review Conference, the Government's and A/E's representatives shall coordinate with the DPW to provide the A/E with direction for packaging or combining ECOs for programming purposes and also indicate the fiscal year for which the programming or implementation documentation shall be prepared. The survey forms completed during this audit shall be submitted with this report. The survey forms only may be submitted in final form with this submittal. They should be clearly marked at the time of submission that they are to be retained. They shall be bound in a standard three-ring binder which will allow repeated disassembly and reassembly of the material contained within.

7.6.2 Final Submittal. The A/E shall prepare and submit the final report when all sections of the report are 100% complete and all comments from the interim submittal have been resolved. The A/E shall submit the Scope of Work for the study and any modifications to the Scope of Work as an appendix to the submittal. The report shall contain a narrative summary of conclusions and recommendations, together with all raw and supporting data, methods used, and sources of information. The report shall integrate all aspects of the study. The recommended projects, as determined in accordance with paragraph 5, shall be presented in order of priority by SIR. The lists of ECOs specified in paragraph 7.6.1 shall also be included for continuity. The final report and all appendices shall be bound in standard three-ring binders which will allow repeated disassembly and reassembly. The final report shall be arranged to include:

a. An Executive Summary to give a brief overview of what was accomplished and the results of this study using graphs, tables and charts as much as possible (see Annex B for minimum requirements).

b. The narrative report describing the problem to be studied, the approach to be used, and the results of this study.

c. Documentation for the recommended projects (includes LCCA Summary Sheets).

d. Appendices to include as a minimum:

- 1) Energy cost development and backup data
- 2) Detailed calculations
- 3) Cost estimates
- 4) Computer printouts (where applicable)
- 5) Scope of Work

LOUISVILLE DISTRICT CORPS OF ENGINEERS
ENGINEERING DIVISION, A/E MANAGEMENT BRANCH (CEORL-ED-M)

ANNEX A
DETAILED SCOPE OF WORK
FORT CAMPBELL, KY
February 15, 1994

1. PROJECT NAME & LOCATION: This is a FY94 EEAP Lighting Energy Study, which includes a lighting survey in various buildings and areas that are summarized below in a. b. and c., as located in Figure A-1.1, and listed in Figure A-1.2.

Other ECOS that are to be considered in addition to lighting efficiency are exit lights, occupancy sensor controls, photocells, controls on lights in zones, smart control devices for shut down when foot candle level exceeds above certain levels, attached exterior lights, and EMCS control of lights.

a. Lighting survey for 52 Airfield Buildings that are located adjacent and in the vicinity of the Campbell Army Airfield.

b. Blanchfield Army Community Hospital, Building 650, a 5-story structure, having 455,469 square feet, however, only approximately 227,785, or about $\frac{1}{2}$ of the building area which are the clinics, labs, rest rooms, and hallways. The hospital is located between Indiana Ave/Ohio Ave. and Jackson Road/25th Street, near Gate No.4.

c. Lighting survey for 47 Korean War Barracks in Blocks 3200, 6700, 6900, and the Airfield Barracks, consisting of only the administration rooms, day rooms, rest rooms, dining areas, and hallways, stairs, and equipment rooms, excluding billet rooms.

2. GENERAL SOW vs. DETAILED SOW: The General Scope of Work (GSOW) will apply to contract efforts as modified by the Detailed SOW. Should conflicts occur between the GSOW and the Detailed SOW, the Detailed SOW shall govern.

3. RESPECTIVE POC's for this study:

Louisville District COE- Charles (Chuck) Lockman/CEORL-ED-M
(502) 582-6041, fax# 6763, or 5281

Fort Campbell, KY DPW- Arlin Wright/Supv. DPW-MESB
(502) 798-8895, fax# 7840

Architect/Engineer(A/E)- Ned W. (Chuck) Belt, P/M
Systems Corp., Suite 306, Cherokee Pl
2200 Sutherland Avenue
Knoxville, TN 37919
(615) 521-6536, or FAX# 524 7514

4. SCOPE:

4.1 The A/E shall provide all work necessary to complete the
A-1

Lighting Energy Study as defined by the GSOW including the Annexes. Information and instructions contained within the SOW are provided as a means for the A/E Project Manager to expand or modify the GSOW as may be needed to suit the study for the three project areas listed in par. 1. above. This study is much more flexible than the standard EEAP ESOS type study, and is meant to address specific opportunities, buildings or systems that the installation feels have high and low potential for energy or dollar savings.

4.2 The study will analyze all lighting survey ECOs as listed in par. 1. above and as listed in Figure A-1.2.

4.3 The study will consider new designs for energy trends that make these facilities more cost effective and energy saving.

4.4 If metering of a facility is required, the A/E shall assist the DPW in arranging for the installation of electrical metering, however, existing data is available at the installation, and by other studies/ surveys.

5. DETAILED REQUIREMENTS: All detail requirements selected at Fort Campbell for the purpose of this study, shall specifically include the specific facilities listed in par, 1. above and projects identified by the DPW staff.

In general, the facilities and projects, when investigated relative to the ECO's provided as follows:

The contractor will review existing building drawings, survey and monitor existing lights, and analyze the listed ECO's, and analyze additional ECO's readily discovered during the field survey.

6. PERFORMANCE: The total time required for completion of the study and the performance of all work shall not be more than 180 calendar days from the Notice to Proceed (NTP) on the contract. If the study takes the A/E less time than scheduled to achieve, a shortened schedule for submittal and coordination of review and interim review meeting at the installation may be coordinated by the A/E with all parties involved in the review process. Figure A-6.1 is a

schedule of pertinent events and milestone dates for acceptable performance of the study at Fort Campbell. Changes or adjustments made to the SOW during the term of the project study shall be made by the COE.

7. SUBMITTAL: The A/E's Project Manager shall provide direct distribution of all required submittal and documents in the numbers as listed in Figure A-7.1.

8. GOVERNMENT-FURNISHED INFORMATION: The following list of reference documents will be furnished to the A/E:

- a. Energy Conservation Investment Program (ECIP) Guidance,

dated 20 Jan 1994,

- b. TM 5-785, Engineering Weather Data.
- c. AR 5-4, Change No. 1, Department of the Army Productivity Improvement Program.
- d. AR 415-15, 1 Jan 84, Military Construction, Army (MCA) Program Development.
- e. The latest MCP Index.
- f. Drawings at the DPW of each facility, if available.

9. LCCID FROM BLAST: A computer program titled Life Cycle Costing in Design (LCCID) will be used and is available from the BLAST Support Office in Urbana, Illinois for a nominal fee. This computer program will be used for performing the economic calculations for ECIP and non-ECIP ECOs. The A/E is encouraged to obtain and use this computer program. The BLAST Support Office can be contacted at 144 Mechanical Engineering Building, 1206 West Green Street, Urbana, Illinois 61801. The telephone number is (217) 333-3977, or (800) 842-5478.

10. If it is possible that the buildings in this study will be subject to the computer modeling requirements of paragraph 2.6 of the GSOW, then the simulation programs acceptable to the office doing the technical review should be listed in the detailed scope of work. Some acceptable simulation programs follow:

- a. Building Loads and System Thermodynamics (BLAST) *
 - b. DOE 2.1B *
 - c. Carrier E20 or Hourly Analysis Program (HAP) **
 - d. Trane Air-Conditioning Economics (TRACE) **
- * Very accurate, but requires a lot of time for input; therefore it is rather expensive for straightforward projects.
- ** Adequate for load determination, equipment selection, and energy performance for most projects.

FIGURE A-1.2 BUILDING LIST:

ENERGY ENGINEERING ANALYSIS PROGRAM (EEAP) FY94:

FY94 FORT CAMPBELL LIGHTING STUDY

- a. 52 Airfield Buildings, b. Blanchfield Army Community Hospital,
& c. 47 Korean War Barracks

BUILDINGS LIST

- a. **Airfield Buildings-** Lighting, occupancy sensors controls, exit signs, and exterior lights of buildings.

No.	Cat	C	Short Title	User	Gr	□'
7109	13320		Nav Aids Bldg	CAAF(NAV Mnt/AID		192
7110	72111		ENL BKS w/o D	AV REGT(6/101Bn)		23628
7112	72111		ENL BKS w/o D	AV REGT(6/101Bn)		25625
7114	72210		UPH Dining Fa	DISCOM(8thAVDin)		7173
7116	72210		UPH Dining Fa	DISCOM(8thAV A)		6909
7118	72111		ENL BKS w/o D	DISCOM(8thAVBN)		25625
7120	72111		ENL BKS w/o D	DISCOM(8thAVBN)		25625
7131	14185		Co Hq Bldg	DISCOM(8thAVA&S)		15404
7133	14185		Co Hq Bldg	AV REST(ADM&SUP)		5135
7133	14185		Co Hq Bldg	DISCOM(8thADMSP)		5134
7133	14185		Co Hq Bldg	DISCOM(8thADMSP)		5135
7134	72335		BnStor. Bldg	DISCOM(8thBNSTG)		17950
7141	87235		Dispatch Bld	DISCOM(8thDISPA)		192
7141	21410		VehMnt Sh Org	DISCOM(8thAVVMS)		5077
7145	14183		Bn Hq Bldg	AV REGT(BDE REUP)		2581
7149	55010		Clinic w/o Bds	MEDDAC(TMC5Airf)		9248
7150	21120		AcCompMntShp	DOL(Repair/Stge)		9237
7152	21110		MntHangarAVUM	AV REGT(OLRHgr#4)		20511
7154	21110		MntHangarAVUM	AV REGT(Hgr#3)		36677
7155	14112		Avn Ops Bldg	AV REGT(6/101AV)		4518
7156	21112		MntHangarComb	DISCOM(Hgr#2)		34785
7157	14112		Avn Ops Bldg	AV REGT(HQS BLDG)		6649
7158	87230		Sentry Sta	CAAF(Sentry Sta)		100
7159	17110		AC Trainer B	AV REGT(S4)		4259
7160	14111		AffFire Rsq Sta	DEH(AffFldFireRes)		12516
7161	21110		MntHangarAVUM	CAAF(AVNMMntHgr#1)		11218
7162	13310		FltCon TowHD	CAAF(AVNFltContT)		1256
7163	14110		Flt Ops Bldg	CAAF(AVNSecAfaOp)		11756
7164	13340		Radar Bldg	CAAF(AVNSecRadar)		3105
7165	14132		Ready Bldg	CAAF(AlliedMTAF)		954
7170	14131		Ops Gen Purp	USAF(OL-A436/701		8400
7176	21140		AcEngTest Fac	DISCOM(ACEngTest)		3230
7177	44210		AcPtsStr Bldg	DISCOM(8AVBNAirSt		5512
7179	14132		Ops Gen Purp	101CSG(29TCBNDACG)		9300
7187	13160		XmtrBldgRadio	CAAF(AVNTransmRad)		1734
7202	13170		ReceiverBldg	CAAF(AVNReceiverB)		1392
7206	21110		MntHangarAVUM	DISCOM(50AmbStg)		24178
7208	61050		AdminGen Purp	AVRegtAdminHgr#6		1560
7208	14112		AC Trainer B	AVRegtAdminHgr#6		1560 (36 buildings)

(CONTINUED-Airfield Buildings)

No.	Cat	C	Short Title	User	Gr	□'
7208	21110		MntHangarAVUM	AVRegtAVUMHgr#6		38792
7210	21111		MntHangarAVIM	DISCOM(8AVIMHgr7)		32611
7212	13310		FltCon TowHD	CAAF(AVNFltContT)		1849
7214	21110		MntHangarAVUM	AV REGT Hgr8AVUM		41860
7218	21110		MntHangarAVUM	AV REGT Hgr9AVUM		41860
7223	82150		SteamPlPower	DEH Steam Plant		2530
7243	21110		MntHangarAVUM	AV REGTBnHgr10		41117
7245	21110		MntHangarAVUM	AV REGTBnHgr11		49139
7262	21111		MntHangarAVIM	160SPOpnsAV Hgr15		69243
7264	21111		MntHangarAVIM	160SPOpnsAV Hgr16		60000
7267	17112		FlgtSim Bldg	160SPOpnsFltSimB		28744
7268	21110		MntHangarAVUM	160SPOpnsGpHgr17		60400
7272	21110		MntHangarAVUM	160SPOpnsGpHgr18		40548
7273	44270		GenStorehouse	160SPOpnsAVSP		4987
7281	61050		AdminGen Purp	160SPOpnsAVGPMAd		468
7281	44210		AcPts StrBldg	160SPOpnsACPtsStg		10802
7281	21740		AvMnt Shop	160SPOpnsMaintShp		1230
7294	14180		Scale House	160SPOpnsScaleHse		72

(16 buildings)=

Total 52 Airfield Buildings @ Estm'd □' 921K, whereby 8 Bldgs are over 40K each, and 11 Bldgs are over 20K each.

b. Hospital- Clinics, labs, rest rooms, and hallway lighting of Hospital, the exit signs, occupancy sensor controls, exterior lights of building, and EMCS controlling.

No.	Cat	C	Short Title	User	Gr	□'
0650	51010		Hospital	MEDDAC(BACH ABC)		455469
					Estm'd □'	227785

(01 building)= Total 1 Building

c. Korean War Barracks- Admin Rooms, Day Rooms, Rest Rooms, Dining areas, Hallways, Stairs, & Equipment Rooms lighting, occupancy sensor controls, exit lights, & exterior lights of buildings (bullit rooms not included). Note: Buildings are typical by nature of their function, square footage (□'), and Cat. Code.

No.	Cat	C	Short Title	User	Gr	□'
3211	72110		ENL BKS w/Din	SOC(5TH SFG)		39722
3212	72110		ENL BKS w/Din	SOC(5TH SFG/HHC)		39722
3213	72111		ENL BKS w/o D	SOC(2/5th SFG)		42627
3214	72111		ENL BKS w/o D	SOC(SPT BN SFG)		42627
3215	14131		OPS Gen Purp	SOC(1/5th SFG)		39809
3216	14131		OPS Gen Purp	SOC(1/5th SFG)		39809
3217	72111		ENL BKS w/o D	SOC(1/5th SFGwC)		39722
3218	14131		OPS Gen Purp	SOC(1/5th SFG)		39722
(8)						
6709	72110		ENL BKS w/Din	DISCOM(HHC/101FC)		38145
6710	72111		ENL BKS w/o D	DISCOM(526 FWD)		38406
6711	72110		ENL BKS w/Din	DISCOM(801 MSB)		38329

A-5

No.	Cat	C	Short Title	User	Gr □'
6712	72111	ENL	BKS w/o D	DISCOM(801MSBHQ)	38585
6718	72111	ENL	BKS w/o D	DISCOM(101PSC/FB)	31869
6719	72111	ENL	BKS w/o D	DISCOM(626FWDSPT)	31779
6725	72110	ENL	BKS w/Din	501st SIG	38241
6726	72111	ENL	BKS w/o D	501st SIG	38160
6727	72110	ENL	BKS w/Din	101 CSG(HHD HQ)	38312
6728	72110	ENL	BKS w/Din	DISCOM(426 FSB)	38285
6730	72110	ENL	BKS w/Din	PMO(101 MP CO)	38138
6731	72111	ENL	BKS w/o D	HHC(101ABN C/LEC)	38208
6732	72111	ENL	BKS w/o D	101 CSG(QM/TC)	38442
6733	72110	ENL	BKS w/Din	101 CSG(LMT CO)	37977
(14)					
6936	72110	ENL	BKS w/Din	DIVARTY(1/320FA)	31735
6937	72110	ENL	BKS w/Din	DIVARTY(3/320FA)	37900
6938	72111	ENL	BKS w/o D	DIVARTY(3/320FA)	38039
6939	72110	ENL	BKS w/Din	2/44th ADA	38137
6040	72110	ENL	BKS w/Din	2/44th ADA	38127
6942	72110	ENL	BKS w/Din	326th EN	38098
6943	72111	ENL	BKS w/o D	326th EN	38049
6944	72110	ENL	BKS w/Din	326th EN	38063
6945	72110	ENL	BKS w/Din	DIVARTY(1/320FA)	31685
(9)= Total of 31 Barrack Buildings outside of CAAF					

CAAF Barracks:

6909	72111	ENL	BKS w/o D	AV REGT(7/101)	31758
6910	72110	ENL	BKS w/Din	AV REGT(7/101)	38089
6911	72110	ENL	BKS w/Din	AV REGT(9/101)	38280
6912	72111	ENL	BKS w/o D	AV REGT(4/101)	38310
6917	72110	ENL	BKS w/Din	AV REGT(3/101)	38480
6918	72111	ENL	BKS w/o D	AV REGT(2/101)	38646
6919	72110	ENL	BKS w/Din	AV REGT(2/101)	38711
6920	72111	ENL	BKS w/o D	AV REGT(5/101)	38649
6921	72111	ENL	BKS w/o D	160SPOpnsAVGPw/A	38512
6922	72110	ENL	BKS w/Din	160SPOpnsAVGPw/A	38691
6923	72110	ENL	BKS w/Din	160SPOpnsAVGPw/A	38465
6927	72110	ENL	BKS w/Din	311MI(HHOC/BCo)	38118
6928	72111	ENL	BKS w/o D	311MI(A&C Co)	38120
6929	72111	ENL	BKS w/o D	DIVARTY(HHB/5/8)	38281
6930	72110	ENL	BKS w/Din	DIVARTY(2/320FA)	38196
6931	72110	ENL	BKS w/Din	DIVARTY(2/320FA)	31713

(16 CCAF)=

Total of 47 Barrack Buildings @ Estm'd □' = 1.8M

FIGURE A-6.1. SCHEDULE for Lighting Energy Study, FY94 EEAP, Fort Campbell, KY is as follows:

<u>Item</u>	<u>Calendar</u>	<u>ActualDate</u>
1. RFP LETTER TO A/E.....	TBD	..
2. RFP LETTER RECEIVED BY A/E.....	TBD	..
(COE, MACOM, DPW, and A/E coordinates date)		
3.a A/E SUBMITS PROPOSAL/NEG'Ns BEGIN.....	TBD	..
b Negotiations begin/ends, SAF.....	TBD	..
4. AWARD OF CONTRACT-START/NTP.....	1	..
(field analysis can begin by A/E)		
5. ENTRY INTERVIEW @ Fort Campbell, KY	14	..
(formal SOW Mtg. w/DPW, COE, and MACOM at FC)		
6. INTERIM SUBMITTAL @ 60%.....	100	..
(all field work completed/ECO's analyzed)		
7. REVIEW PERIOD OF 60% INTERIM SUBMITTAL.....	120	..
ends(COE gathers comments from IN-HOUSE/DPW/MACOM)		
8. INTERIM REVIEW MEETING @ FC.....	130	..
(COE, MACOM, DPW, A/E, & others)		
9. EXIT INTERVIEW MTG. @ FC.....	130	..
10. FINAL SUBMITTAL.....	180	..
(A/E sends directly to as listed, herein)		
16. DPW may require to have input on the DD 180		..
Form 1391 from A/E		
17. DPW submits DD Form 1391's.....	TBD	..

FIGURE A-7.1. Distribution of Submittals: The A/E shall make direct submittal and responses to comments as indicated by the following schedule:

<u>Organization</u>	<u>Correspondence</u>	<u>Executive Summary</u>	<u>Reports</u>	<u>Fieldnotes</u>
COMMANDER, US Army Engineer District, Louisville ATTN: CEORL-ED-M/Charles Lockman P.O. Box 59 (express-600 Dr. Martin King Place) Louisville, KY 40201-0059 tel. (502) 582-6041, or fax# 6763, or 5281	1	1	1	1*
HQ 101 Abn Div (AASLT) & Ft. Campbell ATTN: AFZB-DE-R-M/Arlin E. Wright 16th & Ohio St., Bldg. T-865 (DPW) Fort Campbell, KY 42223-1291 tel. (502) 798-8895, or fax# 7840	1	1	1	1*
Headquarters FORSCOM (MACOM) ATTN: FCEN-RDF/Naresh Kapur Fort McPherson, GA 30330-6000 tel. (404) 669-6731, or fax# 6122, or 7751	1	1	1	1*
COMMANDER, US Army Engineer District, Mobile ATTN: CESAM-EN-CC/Tony Battaglia (EEAP TCX) P.O. Box 2288 Mobile, AL 36628-0001 tel. 205-690-2618, or fax# 2424	1	1**1		0
COMMANDER, US Army Engineer Div., Ohio River ATTN: CEORD-DL-M/Joe Semrad P.O. Box 1159 Cincinnati, OH 45201-1159 tel. 513-684-3975	0	1**0		0
COMMANDER, US Army Corps of Engineers ATTN: CEMP-ET/Dan Gentil (EEAP Mgr.) 20 Massachusetts Avenue Washington, D.C. 20314-1000 tel. 202-272-0430	0	1**0		0
COMMANDER, US Army Logistics Evaluation Agency ATTN: LOEA-PL/Mr. Keath New Cumberland Army Depot New Cumberland, Pa. 17070-5006	0	1**0		0

* Field Notes submitted in final at Interim submittal.

** Submit copies of the final Executive Summary Only

ANNEX B

EXECUTIVE SUMMARY GUIDELINE

1. Introduction.
2. Building Data (types, number of similar buildings, sizes, etc.)
3. Present Energy Consumption of Buildings or Systems Studied.
 - o Total Annual Energy Used.
 - o Source Energy Consumption.
 - Electricity - KWH, Dollars, BTU
 - Fuel Oil - GALS, Dollars, BTU
 - Natural Gas - THERMS, Dollars, BTU
 - Propane - GALS, Dollars, BTU
 - Other - QTY, Dollars, BTU
4. Reevaluated Projects Results.
5. Energy Conservation Analysis.
 - o ECOs Investigated.
 - o ECOs Recommended.
 - o ECOs Rejected. (Provide economics or reasons)
 - o ECIP Projects Developed. (Provide list)*
 - o Non-ECIP Projects Developed. (Provide list)*
 - o Operational or Policy Change Recommendations.

* Include the following data from the life cycle cost analysis summary sheet: the cost (construction plus SIOH), the annual energy savings (type and amount), the annual dollar savings, the SIR, the simple payback period and the analysis date.
6. Energy and Cost Savings.
 - o Total Potential Energy and Cost Savings.
 - o Percentage of Energy Conserved.
 - o Energy Use and Cost Before and After the Energy Conservation Opportunities are Implemented.

ANNEX C

REQUIRED DD FORM 1391 DATA

To facilitate ECIP project approval, the following supplemental data shall be provided:

- a. In title block clearly identify projects as "ECIP."
- b. Complete description of each item of work to be accomplished including quantity, square footage, etc.
- c. A comprehensive list of buildings, zones, or areas including building numbers, square foot floor area, designated temporary or permanent, and usage (administration, patient treatment, etc.).
- d. List references, and assumptions, and provide calculations to support dollar and energy savings, and indicate any added costs.
 - (1) If a specific building, zone, or area is used for sample calculations, identify building, zone or area, category, orientation, square footage, floor area, window and wall area for each exposure.
 - (2) Identify weather data source.
 - (3) Identify infiltration assumptions before and after improvements.
 - (4) Include source of expertise and demonstrate savings claimed. Identify any special or critical environmental conditions such as pressure relationships, exhaust or outside air quantities, temperatures, humidity, etc.
- e. Claims for boiler efficiency improvements must identify data to support present properly adjusted boiler operation and future expected efficiency. If full replacement of boilers is indicated, explain rejection of alternatives such as replace burners, nonfunctioning controls, etc. Assessment of the complete existing installation is required to make accurate determinations of required retrofit actions.
- f. Lighting retrofit projects must identify number and type of fixtures, and wattage of each fixture being deleted and installed. New lighting shall be only of the level to meet current criteria. Lamp changes in existing fixtures is not considered an ECIP type project.
- g. An ECIP life cycle cost analysis summary sheet as shown in the ECIP Guidance shall be provided for the complete project and for each discrete part included in the project. The SIR is applicable to all segments of the project. Supporting documentation consisting of basic engineering and economic calculations showing how savings were

determined shall be included.

h. The DD Form 1391 face sheet shall include, for the complete project, the annual dollar and MBTU savings, SIR, simple amortization period and a statement attesting that all buildings and retrofit actions will be in active use throughout the amortization period.

i. The calendar year in which the cost was calculated shall be clearly shown on the DD Form 1391.

j. For each temporary building included in a project, separate documentation is required showing (1) a minimum 10-year continuing need, based on the installation's annual real property utilization survey, for active building retention after retrofit, (2) the specific retrofit action applicable and (3) an economic analysis supporting the specific retrofit.

k. Nonappropriated funded facilities will not be included in an ECIP project without an accompanying statement certifying that utility costs are not reimbursable.

l. Any requirements required by ECIP guidance dated 4 Nov 1992 and any revisions thereto. Note that unescalated costs/savings are to be used in the economic analyses.

m. The five digit category number for all ECIP projects except for Family Housing is 80000. The category code number for Family Housing projects is 71100.

GLOSSARY OF ACRONYMS

A/E	Architect Engineer
AR	Army Regulation
B/C	Benefit to Cost
COE	Corps of Engineers
CWE	Current Working Estimate
DPW	Director of Public Works
DCD	Department of Defense
DSOW	Detailed Scope of Work
E/C	Energy to Cost
ECAM	Energy Conservation and Management
ECIP	Energy Conservation Investment Program
ECO	Energy Conservation Opportunity
EEAP	Energy Engineering Analysis Program
EHSC	Engineering and Housing Support
EMCS	Energy Monitoring Analysis Program
ESOS	Energy Savings Opportunity Survey
GSOW	General Scope of Work
HQUSACE	Headquarters US Army Corps of Engineers
LCCA	Life Cycle Cost Analysis
LCCID	Life Cycle Cost In Design
MACOM	Major Army Command
MCA	Military Construction Army
NECPA	National Energy Conservation Policy Act
OSD PIF	OSD Productivity Capital Investment Funding
PCIP	Productivity Capital Investment Program
PDB	Project Document Brochure
PECIP	Productivity Enhancing Capital Investment Program
POC	Point of Contact
QRIP	Quick Return on Investment Program
SIR	Savings Investment Ratios
TCX	Technical Center of Expertise

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Louisville District COE	Pg 1 of 2
	Pre-Final	○ Location: Fort Campbell, KY	Name: Charles Lockman	8/31/94
	Final	○ Year: P.N.	Organization: CEORL-ED-MS	

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
1	1	1	1-1	CEORL-ED-N Charles Lockman should be CEORL-ED-MS Charles Lockman	A	This will be incorporated into the Final Report	
2	1	2	2-1	2.1.1 Airfield Bldgs represent nine (9) not eight (8) as reported in the second section.	N	The Airfield represents eight (8) functional types: barracks, airfield support facilities, hangars, dining facilities, admin, storage, medical clinic and fir station.	
3	1	2	2-5	Dining facilities - shouldn't bldg 7116 have been reported here because in 2-14 Bldg 7114 was to be closed, thereby leaving 7116 to be evaluated as reported.	A	Bldg 7116 was left off Table 2.1.1.1. Its current function has changed from dining facility to administrative.	
4	3	10	Table 1	6906 should be 6909, or is my list not correct?	A	You are correct. Bldg 6909 was evaluated.	
5	3	9	A-8	Change out page provided by fax with change of address for AFPI-ENO/Naresh Kapur	A	This will be incorporated into the Final Report.	

B-1 ACTION CODES: A - Accepted/Concur D - Action Deferred N - Non-concur W - withdraw

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Louisville District COE	Pg 2 of 2
	Pre-Final	○ Location: Fort Campbell, KY	Name: Tom Allred, Ron Pepper	8/31/94
	Final	○ Year: P.N.	Organization: CEORL-ED-DE	

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
6	1&3	5	5-6	Data between "Interior Lighting Survey Forms" (Vol.3) and ECO-1 Calculations (Vol.1) does not agree. Example: Bldg 7109 - for a 4 lamp fixture wattage is calculated at 226 watts per survey form but is shown as 180 watts on calculation sheet 5-6.	N	The existing fixture wattages were determined by multiplying the voltage by the amps by the number of ballasts per fixture. Example: Bldg 7109 = 120V x .75A x 2 = 180 watts	
7	1	5	5-6	It appears that fixture wattages for replacement fixtures on calculation sheets is too low. Example: Bldg 7109 - for a 4-lamp fixture wattage is shown as 118 watts. This value is lower than the sum of the individual lamp wattages (approx. 30 watts each) not counting the ballast. Therefore, it appears savings are exaggerated!	N	The replacement fixture wattages are consistent with manufacturer's information. This information will be included in the Final Report.	Catalog Cut- Sheets Sections 3, 5, 6
8	-	-	-	It appear, based on comments 6 & 7 that any calculations of savings would be unreliable.	N	The responses to comments 6 & 7 clarifies any concerns with the reliability of Systems Corp analysis.	

Project Review Comments		Interim <input checked="" type="radio"/> Project: EEAP-Lighting Energy Study Pre-Final <input type="radio"/> Location: Fort Campbell, KY Final <input type="radio"/> Year: P.N.	Reviewer: Warren E. Neiden, Jr. P.E. Organization: Mobile District COE - Electrical Branch	Pg 1 of 4 09/01/94
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Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
1	-	-	-	Lighting levels that are being reduced in various proposed areas shall be closely coordinated with the user. This is necessary so as to actually determine the necessary illumination in each area based on actual usage and not by the room name or description alone.	A	The areas surveyed, as detailed in the field survey notes - Volume 3, have the recommended light levels or less. All areas were evaluated to maintain or increase the light levels. The field survey notes reflect the actual function and operating hrs of each area. The Final Report will explain this in further detail.	Section 2
2	-	-	-	No technical data or lighting calculations were provided to back proposals or substantiate actions taken. This is especially so where the lighting level is being questioned, reflectors being proposed, light level is being lowered, and less than one-to-one replacement of lamps will be utilized.	A	The Final Report will include manufacturers' cut sheets on all proposed products. These cut sheets will be included in the 1391 and Project Development Brochures. Sample calculations will be provided in the Final Report to substantiate lamp reductions.	Sections 2, 3, 5, 6
3	-	-	-	It is not clear as to whether or not all existing light fixtures under consideration will have the lens and reflectors cleaned. Also, has this cost been included? This is important to achieve maximum lighting output especially in areas where the light level seems a bit low.	N	This project proposes fixture replacement, not fixture retrofits. New and clean fixtures will replace the old fixtures. Therefore, lens and reflector cleaning costs were not included.	

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Warren E. Neiden, Jr. P.E.	Pg 2 of 4
	Pre-Final	○ Location: Fort Campbell, KY	Organization: Mobile District	09/01/94
	Final	○ Year: P.N.	COE - Electrical Branch	

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
4	-	-	-	I could find no field data that indicated how the existing light levels were obtained and what were the conditions of the existing fixtures (dirtling.....)	N	The field survey notes in Volume 3 detail the lighting levels measured in the surveyed areas. These measurements were taken at the level of the work space and on the floor in the corridors. The field survey notes, also, detail any unique appearances in the fixture other than normal wear and tear.	
5	-	-	-	Ballast replacement is not clear. Are all ballasts throughout this proposal replaced one-for-one? If not, how does this affect the flexibility of multi-level switching of lights. This is especially noticed where a 4-lamp fixture is being replaced with a 2-lamp w/ reflectors. If the proposal considers rewiring of fixtures, has this also been included in the cost analysis?	A	The ballast/fixture configuration was proposed as follows: a 4-lamp fixture has 2-2 lamps ballasts, a 3-lamp fixture has 1-3 lamp ballast, a 2 lamp fixture has 1-2 lamp ballast and a 1 lamp fixture has a 2 lamp ballast tandem wired to the adjacent fixture and include the necessary additional labor and material.	
6	-	-	-	This submittal should include data and manufacturers names on the reflectors being proposed. Reflectance values used in this analysis are unknown, therefore hard to determine if proposals are valid and consider all factors.	A	The Final Report will include manufacturers' cut sheets on all proposed products. These cut sheets will be included in the 1391 and Project Development Brochures.	Sections 3, 5, 6

ACTION CODES: A - Accepted/Concur D - Action Deferred N - Non-concur W - withdraw

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Warren E. Neiden, Jr. P.E.	Pg 3 of 4
	Pre-Final	○ Location: Fort Campbell, KY	Organization: Mobile District	09/01/94
	Final	○ Year: P.N.	COE - Electrical Branch	

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
7	-	-	-	It is noticed that the proposals are considering air-conditioning savings for the cooling months, but did not consider the extra heating cost during the winter months due to the reduction in heat loads in the more efficient lighting proposals. All cost as well as savings should be included in the analysis.	A	The Hospital was the only building evaluated for cooling savings. It was determined all other facilities would break even between the cooling and heating systems. The hospital has a year round cooling load with perimeter reheat. The hospital was designed to use the load w/i the areas to heat the space. By reducing the heat load with the efficient lighting systems, the supply temperature of the cooling system can be reduced.	
8	-	-	-	The analysis should consider average footcandles not initial. By merely replacing lamps, ballasts and cleaning the fixture will increase the illumination well above present conditions. That's why lighting calculations are a must in comparing the present lighting system to a new proposed one.	A	The analysis does consider lamp lumen deterioration. The analysis is to replace the fixtures, not to retrofit them. The Final Report will include a sample calculation to verify the light levels in the proposed systems.	Section 2
9	1	5	5-2	The index of buildings should reflect page 5-57 in lieu of 5-51 for building #7131.	A	This will be corrected for the Final Report.	

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Warren E. Neiden, Jr. P.E.	Pg 4 of 4
	Pre-Final	○ Location: Fort Campbell, KY	Organization: Mobile District	09/01/94
	Final	○ Year: P.N.	COE - Electrical Branch	

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
10	-	-	-	When considering occupancy sensors, close coordination with the user is a must to determine what will be actually saved over a period of time. Area or room names can be misleading.	A	The Field Survey Forms located in Vol.3 reflect the actual area function, operating hours and amount of area utilization. This information was then used to determine the potential savings for installing occupancy sensors.	

ACTION CODES: A - Accepted/Concur D - Action Deferred N - Non-concur W - withdraw

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Naresh Kapur	Pg 1 of 4
	Pre-Final	○ Location: Fort Campbell, KY	Organization: FORSCOM	09/02/94
	Final	○ Year: P.N.		

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
1	-	-	-	Systems Corp has aggressively pursued this EEAP study for a quick submission of the Interim Report. Thanks.	-		
2	1	2	2-12	Delamping is not mentioned in the ECO description. Was there any opportunities based on field work?	A	Delamping was considered in the type of replacement fixture used. For example, if an area slightly exceeded recommended fc levels, Systems Corp replaced the 4-lamp fixture with a 2-lamp fixture w/ reflectors. Delamping as a separate ECO was not included in the Scope of Work and can not be funded by ECIP money.	
3	-	-	-	Many building corridors have significant amounts of lighting. Some corridors are overlit especially in the Hospital floors near the elevators. We'd like to see a discussion on this.	N	All corridor areas were at or below recommended fc levels. Systems Corp did not survey the elevator areas at the Hospital. This area was not included in the scope.	
4	1	3	3-9	In Table 3.4.2.1, maintenance and replacement costs against fluorescent EXIT signs, material & labor costs are \$8. What does this include?	A	The \$8 represents the material & labor required over a 10 yr life of the sign. This would be lamp and labor replacement costs. Costs were calculated using manufacturer's quotes and labor estimates from Means for Lotus.	

Project Review Comments				Interim Pre-Final Final	● Project: EEAP-Lighting Energy Study ○ Location: Fort Campbell, KY ○ Year: P.N.	Reviewer: Naresh Kapur Organization: FORSCOM	Pg 2 of 4 09/02/94	
Comment No.	Vol.	Section	Page	COMMENTS		Action Code	RESOLUTIONS (include location of documents)	Ref.
5	1	5	-	All the ECO, data & field notes are very well organized. The cost estimates, savings & LCCA are also computerized. For ECOs related to each Bldg there is need for a little bit of explanation as to what is being done & why. Also need to mention what is not being done & why. This can be done in the beginning of Section 5. Otherwise it would not be so easy to follow ECOs without doing a whole lot of research.		A	A more detailed description will be included in the Final Report.	sections 2-6
6	1-2	5	-	In LCCA, the non-energy savings values in 3A & 3B are used. How do we know the source of these savings? Where to look for verification of these numbers?		A	These numbers were calculated using the material and labor replacement costs shown in Table 3.4.2.1. This information multiplied by the number of fixtures shown on the calculation forms will give you the total non-energy savings.	Section 2
7	1	5	5-14	For 2 lamp fixture, wattage including ballast is shown as 84 watts. How was this calculated? Per field notes, existing lamps are 34 watt each.		A	Please refer to the resolution to comment #6.	
8	1-2	-	-	For many bldgs, overall SIR & PB don't meet ECIP criteria. Can we just select those items which do meet the ECIP criteria?		A	The buildings with a payback of more than 11 years will be removed from the total project.	

ACTION CODES: A - Accepted/Concur D - Action Deferred N - Non-concur W - withdraw

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Naresh Kapur	Pg 3 of 4
	Pre-Final	○ Location: Fort Campbell, KY	Organization: FORSCOM	09/02/94
	Final	○ Year: P.N.		

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
9	-	-	-	For hangar bay areas, the light levels should be taken both during daylight and at night to get a better feel for ECO possibilities.	N	The light levels were taken during the day with the lights on and off. This accomplishes the same thing. These readings will show the amount of daylight contributing to the areas.	
10	3	-	-	In many barracks area, the light levels are not provided. These lights remain on most of the time. Request to provide the information. Use this information to further develop the ECOs.	A	The areas without recorded light level readings were estimated to be at or below the recommended light level or consistent with the same areas in the other barracks.	
11	1	5	5-39 5-48	LCCA for bldgs 7118 & 7120 (each 25,625) enlisted barracks yields ECO with cost estimates of \$703 each, SIR = 3.15 & PB=3.79. Discuss.	A	The hallways, latrines and laundry rooms in these bldgs have already been switched to T8 lamps. The dayroom is the only room included in the scope that has not been converted. This is noted on the field notes.	
12	1	5	5-57	LCCA for bldg 7131, investment \$18,520, SIR=1.24, PB=9.70. Can we delete unproductive parts of this ECO and make it meet ECIP criteria? Similar situation exist for other buildings also.	A	This will be grouped with more favorable bldgs to improve overall project payback. Bldgs with a payback of more than 11 yrs will be pulled out of project.	
13	1	5	5-256	Bldg 7206 Maintenance Hangar, hours of operation is 10 hr/dy, 5 dy/wk. Check.	N	The operating hours reflect the operation during the field survey. This was also double checked during the Interim Review.	

ACTION CODES: A - Accepted/Concur D - Action Deferred N - Non-concur W - withdraw

Project Review Comments	Interim	● Project: EEAP-Lighting Energy Study	Reviewer: Naresh Kapur	Pg 4 of 4
	Pre-Final	○ Location: Fort Campbell, KY	Organization: FORSCOM	09/02/94
	Final	○ Year: P.N.		

Comment No.	Vol.	Section	Page	COMMENTS	Action Code	RESOLUTIONS (include location of documents)	Ref.
14	1	5	5-345	Bldg 7262 Hangar, investment \$42,180, SIR=.55. PB=21.68 yrs. What can be done to improve the economies. Please take another look at it.	A	This will be re-evaluated to only replace the lamps and ballasts. This bldg is only a couple of years old.	Section 8
15	2	5-3	-	Was delamping considered in areas where the light fixtures may be redundant or contributing to overlighting or otherwise not needed. Please discuss.	A	Delamping was considered in the type of replacement fixture used.	
16	2	5-3	-	Please discuss why retrofit kits can't be used other installations have used.	A	The retrofit kits can't be used due to the type of existing fluorescent EXIT sign. The current sign is not the box type. Please refer to Section 2.3.1 paragraph 2.	
17	3	-	bldg 7112	The field notes indicate one EXIT sign. Please check, This bldg has 25,625 sf.	A	Many of the barracks surveyed use the EXIT signs without lamps. These can not be retrofitted or replaced without adding to the electrical consumption.	
18	2	7.3.2	7-4	ECO-2 Lighting Controls need to beef up this write-up on lighting controls. Give examples/sketches on how it works.	A	This will be expanded in the Final Report. Sketches of layout are included in the field survey notes.	Section 2 E-4

ACTION CODES: A - Accepted/Concur D - Action Deferred N - Non-concur W - withdraw

THIS PAGE AND THE PAGE FOLLOWING DETAIL THE ANALYSIS CONCERNING THE RETROFITTED BARRACKS; CHANGING EXISTING T8 MAGNETIC BALLASTS TO T8 ELECTRONIC BALLASTS. AS THE FOLLOWING WILL SHOW, THE RETROFIT WILL NOT PAYBACK WITHIN 10 YEARS. THESE CALCULATIONS ARE IN RESPONSE TO INTERIM REVIEW COMMENTS.

LIFE CYCLE COST ANALYSIS FOR BARRACKS' LATRINES			
EXAMPLE CALCULATION			
T8 MAGNETIC TO T8 ELECTRONIC BALLAST			
1 FOR 1 BALLAST CHANGE; NO LAMP CHANGES			
ENERGY SAVINGS CALCULATIONS (FOR 1 FIXTURE): (12 HR/DAY, 7 DAY/WEEK)			
ENERGY CHARGE:	\$0.0211	/KWH	
DEMAND CHARGE:	\$11.78	/KW	
BASELINE ENERGY CONSUMPTION:			
71	WATTS/FIXTURE	X 4368	HR/YR = 310 KWH
PROPOSED ENERGY CONSUMPTION:			
58	WATTS/FIXTURE	X 4368	HR/YR = 253 KWH
ENERGY SAVINGS =	57 KWH		
ENERGY SAVINGS =	\$1.20	/YR	DEMAND SAVINGS = \$1.84 /YR
TOTAL SAVINGS =		\$3.04 /YR	
TOTAL INVESTMENT		\$60	
FIRST YEAR SAVINGS		\$3	
SIMPLE PAYBACK		19.49 YEARS	
SIR		0.62	

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: T8BALLST
LCCID 1.080

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: 9401301 T8 BALLAST RETRO LATRINES

FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING

ANALYSIS DATE: 09-19-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLENSBE

1. INVESTMENT

A. CONSTRUCTION COST	\$	55.	
B. SIOH	\$	3.	
C. DESIGN COST	\$	3.	
D. TOTAL COST (1A+1B+1C)	\$	60.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	\$	0.	
F. PUBLIC UTILITY COMPANY REBATE	\$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)	\$		60.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST \$/MBTU(1)	SAVINGS MBTU/YR(2)	ANNUAL \$ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	\$ 6.18	0.	\$ 1.	12.43	\$ 15.
B. DIST	\$.00	0.	\$ 0.	13.56	\$ 0.
C. RESID	\$.00	0.	\$ 0.	15.09	\$ 0.
D. NAT G	\$.00	0.	\$ 0.	15.86	\$ 0.
E. COAL	\$.00	0.	\$ 0.	13.61	\$ 0.
F. LPG	\$.00	0.	\$ 0.	12.64	\$ 0.
M. DEMAND SAVINGS			\$ 2.	11.85	\$ 22.
N. TOTAL		0.	\$ 3.		\$ 37.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)

(1) DISCOUNT FACTOR (TABLE A)	11.85	\$	0.
(2) DISCOUNTED SAVING/COST (3A X 3A1)		\$	0.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-) (4)
------	------------------------------	-----------------	------------------------	--

d. TOTAL \$ 0. 0.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-) (3A2+3Bd4) \$ 0.

4. FIRST YEAR DOLLAR SAVINGS $2N3+3A+(3Bd1/(YRS\ ECONOMIC\ LIFE))$ \$ 3.

5. SIMPLE PAYBACK PERIOD (1G/4) 19.49 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 37.

7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = .62
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): -.14 %

THE FOLLOWING PAGES ARE THE LIFE CYCLE COST ANALYSIS, THE CALCULATIONS, AND THE COST ESTIMATE REWORKED FOR BUILDING 7262. THE COST ESTIMATE WAS CHANGED TO REFLECT A BALLAST AND LAMP CHANGE ONLY FOR FLUORESCENT FIXTURES, NO TOTAL FIXTURE CHANGES. THE FOLLOWING TABLE LISTS THE PREVIOUS LCCA RESULTS AND THE LCCA RESULTS WITH THE COST ESTIMATE CHANGE. THE RETROFIT HAD POORER ECONOMIC RESULTS DUE TO HIGHER LABOR COSTS.

BUILDING 7262 LCCA FIXTURE CHANGEOUT VS BALLAST/LAMP RETROFIT		
	COMPLETE FIXTURE RETROFIT	BALLAST & LAMP REPLACEMENT
INVESTMENT COSTS	\$42,180	\$46,104
FIRST YEAR SAVINGS	\$1,945	\$1,945
SIMPLE PAYBACK	21.68	23.70
SIR	0.55	0.51

LIFE CYCLE COST ANALYSIS SUMMARY

STUDY: ECO17262

LCCID 1.080

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

INSTALLATION & LOCATION: FT CAMPBELL REGION NOS. 4 CENSUS: 3

PROJECT NO. & TITLE: ECO17262 LIGHTING BLDG 7262

FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHT

ANALYSIS DATE: 09-19-94 ECONOMIC LIFE 15 YEARS PREPARED BY: JULIE HOLLENS

1. INVESTMENT

A. CONSTRUCTION COST	\$	41913.	
B. SIOH	\$	2096.	
C. DESIGN COST	\$	2096.	
D. TOTAL COST (1A+1B+1C)	\$	46104.	
E. SALVAGE VALUE OF EXISTING EQUIPMENT	\$	0.	
F. PUBLIC UTILITY COMPANY REBATE	\$	0.	
G. TOTAL INVESTMENT (1D - 1E - 1F)	\$		46104.

2. ENERGY SAVINGS (+) / COST (-)

DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST \$/MBTU(1)	SAVINGS MBTU/YR(2)	ANNUAL \$ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELECT	\$ 6.18	88.	\$ 544.	12.43	\$ 6761.
B. DIST	\$.00	0.	\$ 0.	13.56	\$ 0.
C. RESID	\$.00	0.	\$ 0.	15.09	\$ 0.
D. NAT G	\$.00	0.	\$ 0.	15.86	\$ 0.
E. COAL	\$.00	0.	\$ 0.	13.61	\$ 0.
F. LPG	\$.00	0.	\$ 0.	12.64	\$ 0.
M. DEMAND SAVINGS			\$ 1395.	11.85	\$ 16531.
N. TOTAL		88.	\$ 1939.		\$ 23291.

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)

(1) DISCOUNT FACTOR (TABLE A)	11.85	\$	6.
(2) DISCOUNTED SAVING/COST (3A X 3A1)		\$	76.

B. NON RECURRING SAVINGS(+) / COSTS(-)

ITEM	SAVINGS(+) COST(-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS(+)/ COST(-) (4)
------	------------------------------	-----------------	------------------------	--

d. TOTAL \$ 0. 0.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-) (3A2+3Bd4) \$ 76.

4. FIRST YEAR DOLLAR SAVINGS $2N3+3A+(3Bd1/(YRS\ ECONOMIC\ LIFE))$ \$ 1945.

5. SIMPLE PAYBACK PERIOD (1G/4) 23.70 YEARS

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 23367.

7. SAVINGS TO INVESTMENT RATIO (SIR) = $(6 / 1G) =$.51
(IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): -1.47 %

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	7262		
AREA:	ENTIRE BLDG		
HOURS/DAY	10	ELECTRIC COSTS:	
DAYS/WEEK	5	ENERGY CHARGE	\$0.0211 PER KWH
BUILDING VOLTAGE	277	DEMAND CHARGE	\$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	96	W/FIXT =	0	WATTS		
4 FOOT	1 LAMP @	48	W/FIXT =	0	WATTS		
	308 2 LAMP @	90	W/FIXT =	27720	WATTS		
	3 LAMP @	144	W/FIXT =	0	WATTS		
	4 LAMP @	192	W/FIXT =	0	WATTS		
8 FOOT	2 LAMP @	180	W/FIXT =	0	WATTS		

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58	W/FIXT =	0	WATTS
4 FOOT	0 1 LAMP @	29	W/FIXT =	0	WATTS
	308 2 LAMP @	58	W/FIXT =	17864	WATTS
	0 3 LAMP @	87	W/FIXT =	0	WATTS
	0 4 LAMP @	118	W/FIXT =	0	WATTS
8 FOOT	0 2 LAMP @	125	W/FIXT =	0	WATTS

BASELINE ENERGY CONSUMPTION	72,072 KWH/YR	ECO ENERGY CONSUMPTION	46,446 KWH/YR
	259,459 MJ/YR		167,207 MJ/YR
BASELINE DEMAND	27.72 KW	ECO DEMAND	17.86 KW

NET ENERGY SAVINGS	92,252 MJ/YR	NET DEMAND SAVINGS	\$1,393 /YR
NET ENERGY SAVINGS	87.43 MBTU/YR	NET DOLLAR SAVINGS	\$1,934 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7262
AREA: RESTROOM

LAMP USE:

HOURS/DAY 3

DAYS/WEEK 5

PEAK USE 2 (1-YES, 2-NO)

BUILDING VOLTAGE 120

ELECTRIC COSTS:

ENERGY CHARGE \$0.0211 PER KWH

DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
1 LAMPS @	60	WATTS =	60	WATTS
LAMPS @	75	WATTS =	0	WATTS
LAMPS @	90	WATTS =	0	WATTS
LAMPS @	100	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

1 LAMPS @	13	WATTS =	13	WATTS
0 LAMPS @	18	WATTS =	0	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

47 KWH
168 MJ

ECO ENERGY CONSUMPTION

10 KWH
37 MJ
0.01 KW

BASELINE DEMAND

0.06 KW

ECO DEMAND

NET ENERGY SAVINGS

132 MJ/YR

NET DEMAND SAVINGS

\$0 /YR

NET ENERGY SAVINGS

0.13 MBTU/YR

NET DOLLAR SAVINGS

\$1 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

BUILDING #: 7262

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

INCANDESCENT EXIT SIGNS # EXIT SIGNS	FLUORESCENT EXIT SIGNS # EXIT SIGNS	REPLACEMENT FIXTURE # EXIT SIGNS
30	1	1
WATTAGE	WATTAGE	WATTAGE
	18	3

BASELINE ENERGY CONSUMPTION	158 KWH/YR	ECO ENERGY CONSUMPTION	26 KWH/YR
	568 MJ/YR		95 MJ/YR
BASELINE DEMAND	0.02 KW	ECO DEMAND	0.00 KW

NET ENERGY SAVINGS	473 MJ/YR	NET DEMAND SAVINGS	\$2 /YR
NET ENERGY SAVINGS	0.45 MBTU/YR	NET DOLLAR SAVINGS	\$5 /YR

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Estimate:      Bldg. 7262      Date:      8 July 1994
Description:    Hangar
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					308.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		149.38	\$0	\$4,112	\$0	\$0	\$4,112
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					2.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		0.52	\$0	\$14	\$0	\$0	\$14
U02 SITEWORK		150	\$0	\$4,126	\$0	\$0	\$4,126

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE					1.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	1.00	\$50	\$28	\$0	\$0		\$78
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8, BALLAST CHANGEOUT/PIN CONNECTOR REPLACEMNT					222.00 EA	
Unit values	1.51	42.00	83.00	0.00	0.00		125.00
Totals	335.22	\$9,324	\$18,426	\$0	\$0		\$27,750
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					(qty) EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDSTL FLUOR 1X4' W 2 32W T8, BALLAST CHANGEOUT/PIN CONNECTOR REPLACEMNT					16.00 EA	
Unit values	3.02	42.00	83.00	0.00	0.00		125.00

19-Sep-94

MeansData for Lotus

Page 3

Totals	48.32	\$672	\$1,328	\$0	\$0	\$2,000
1661309911	SUR FLUOR 2X4' W 2 32W T8, BALLAST CHANGEOUT/PIN CONNECTOR REPLACEMNT					
Unit values	3.02	42.00	83.00	0.00	70.00 EA	125.00
Totals	211.40	\$2,940	\$5,810	\$0	\$0	\$8,750
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 1 13 W PL WALL / CEILING MOUNT					
Unit values	1.00	20.50	27.50	0.00	1.00 EA	48.00
Totals	1.00	\$21	\$28	\$0	\$0	\$49

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Line #      Description
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              Manhours   Matl      Labor    Equipment    Sub      Total
=====
U16 ELECTRICAL      597    $13,007    $25,620         $0         $0    $38,627

ESTIMATE TOTAL      747    $13,007    $29,746         $0         $0    $42,753

SALES TAX           5.00%         $650
MATL MARKUP        -40.00%    ($5,203)
LABOR MARKUP       -13.40%         ($3,986)
EQUIPT MARKUP       0.00%         $0
SUB MARKUP          0.00%         $0

TOTAL BEFORE CONTINGENC    $8,455    $25,760         $0         $0    $34,215
CONTINGENCY           10.00%         $3,421
BOND                   2.50%         $855
PROFIT                10.00%         $3,421

JOB TOTAL                                     $41,913
=====
```

```

=====
Estimate:      Bldg. 7262      Date:      8 July 1994
Description:    Hangar
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell   Job #:
Sq. footage:   City indx:
=====

```

=====

SUMMARY

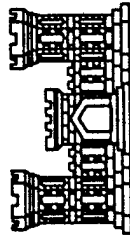
	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	150	\$0	\$4,126	\$0	\$0	\$4,126
U16 ELECTRICAL	597	\$13,007	\$25,620	\$0	\$0	\$38,627
TOTAL	747	\$13,007	\$29,746	\$0	\$0	\$42,753
SALES TAX	5.00%	\$650				
MATL MARKUP	-40.00%	(\$5,203)				
LABOR MARKUP	-13.40%		(\$3,986)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$8,455	\$25,760	\$0	\$0	\$34,215
CONTINGENCY	10.00%					\$3,421
BOND	2.50%					\$855
PROFIT	10.00%					\$3,421
JOB TOTAL						\$41,913

Energy Engineering Analysis Program (EEAP)

Lighting Energy Study

Fort Campbell, Kentucky

Interim Review



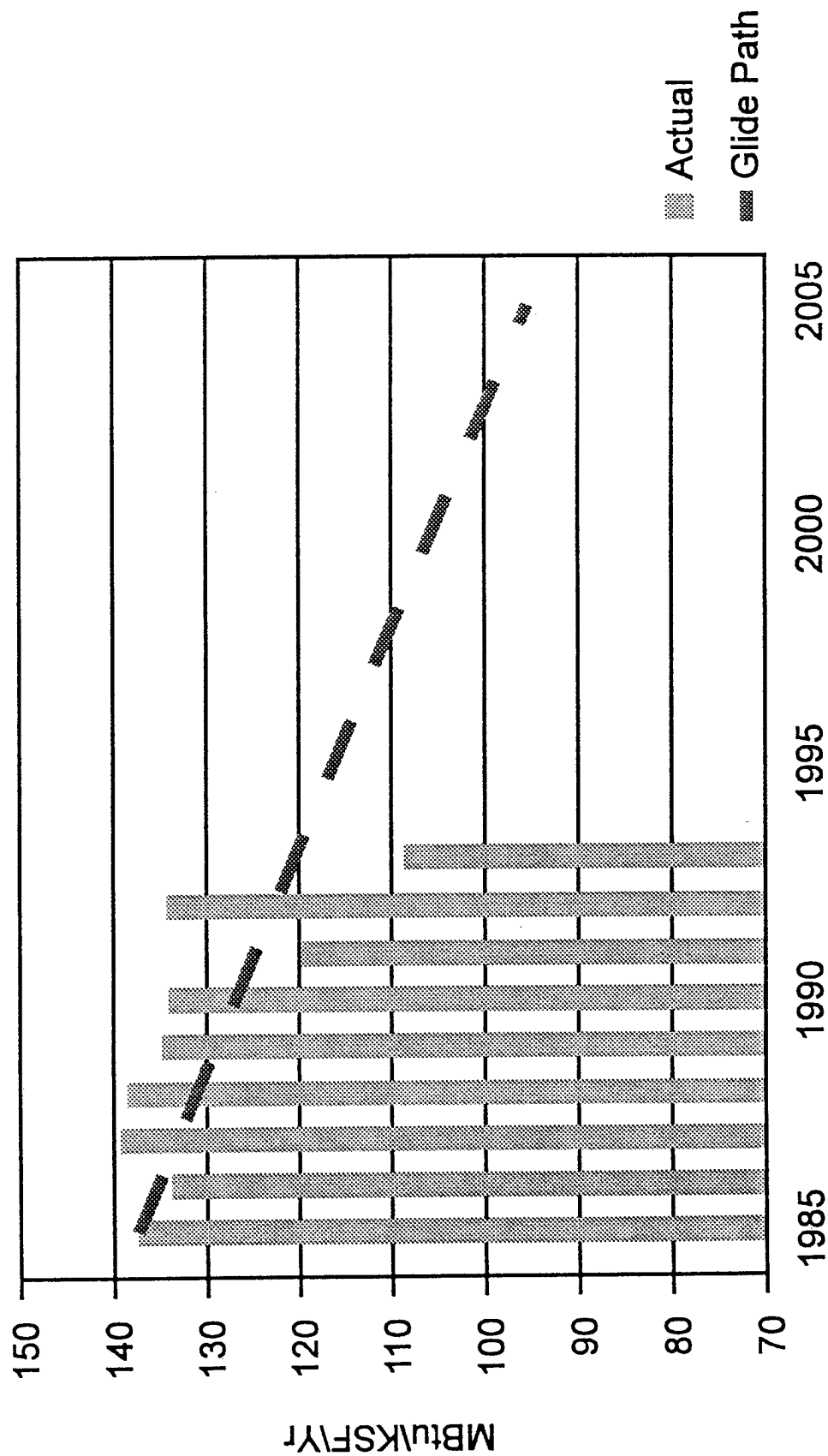
Louisville District-
US Army Corp
of Engineers

SYSTEMS*corp*

SYSTEMS ENGINEERING AND MANAGEMENT CORPORATION

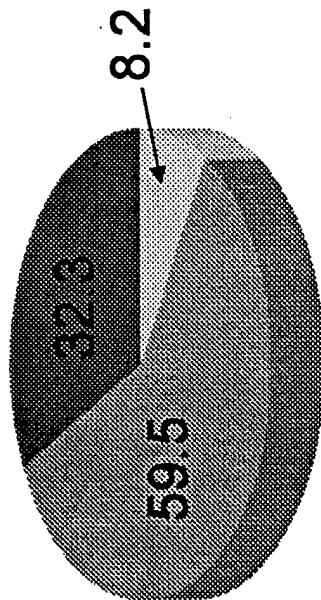
Energy Consumption

Fort Campbell

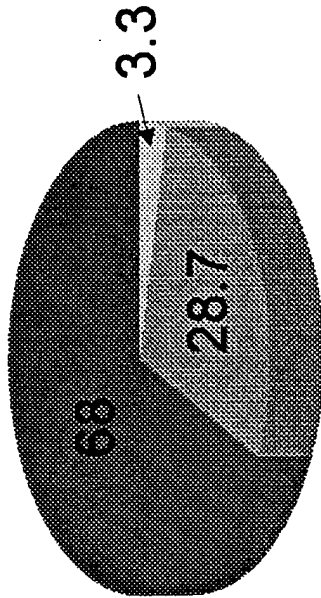


Fort Campbell

FY93



2,542,026,249 MJ



\$16,898,000

■ Electric ■ Natural Gas ■ Other

Fort Campbell Lighting Energy Study

Electric Costs

Energy Charge	\$0.02114/KWH \$6.18/MBtu (No Demand)
Demand Charge	\$11.78/KW/Mo

Fort Campbell Lighting Energy Study

Work Accomplished to Date

- Field Surveys for 95 Buildings
- Evaluation of 109 Energy Conservation Opportunities
- Preparation and Completion of all Field Notes
- Completion of Interim Report

Fort Campbell Lighting Energy Study

Energy Conservation Opportunities Evaluated

- ECO-1: High Efficiency Interior/Exterior Lighting
- ECO-2: Lighting Controls

Fort Campbell Lighting Energy Study

ECO - 1

Buildings Evaluated

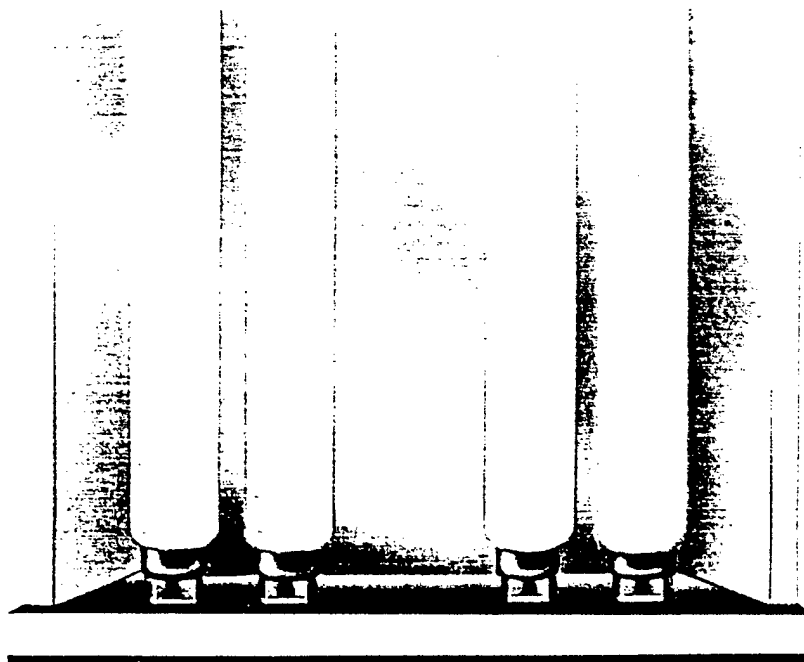
- Airfield Bldgs
- Korean War Barracks
- Hospital

Fort Campbell Lighting Energy Study

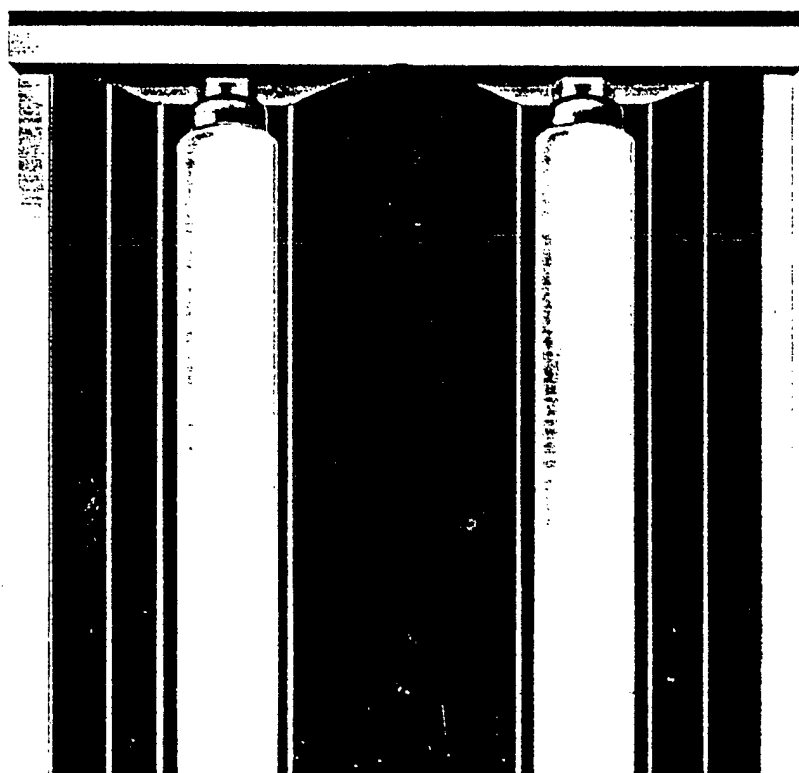
ECO - 1

Retrofits

- T12 Fluorescents → T8 Fluorescent w/Electronic Ballasts
Reflectors used in Hospital and Administrative Bldgs @ Airfield
- Incandescent → Compact Fluorescent
- Incan/Fluor Exit Signs → LED Exit Signs
- Mercury Vapor → Metal Halide or High Pressure Sodium
(MH used in all Hangars)
- Exterior Lights → High Pressure Sodium



**SILVERLUX™
REFLECTORS
CUT YOUR
LIGHTING ENERGY
COSTS IN HALF.**





MOTOROLA
Lighting Inc.



A Environmental Protection Agency



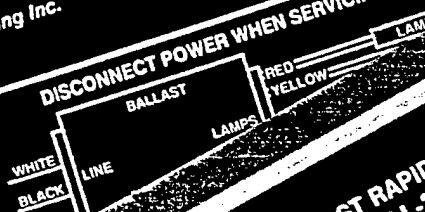
MOTOROLA
Lighting Inc.

ELECTRONIC BALLAST RAPID START
MODEL NO. M3-RN-T12-1LL-120
FOR SERVICE: 1-800-MLI-0089
BUFFALO GROVE, IL 60089

NO PCB'S



DISCONNECT POWER WHEN SERVICING



3 LAMPS
INPUT:
120 VOLTS AC 60 Hz



MOTOROLA
Lighting Inc.

ELECTRONIC BALLAST RAPID START
MODEL NO. M4-RN-T8-1LL-277
FOR SERVICE: 1-800-MLI-0089
BUFFALO GROVE, IL 60089

NO PCB'S



WHITE
BLACK
LINE
BALLAST CASE
MUST BE GROUNDED

MFG IN USA

RED
YELLOW
BLUE
BROWN
BLUE
18 AWG Solid Copper Wire
Strip to 3/8 inch



LISTED
1LS3
PATENT PENDING

CLASS P

HIGH POWER FACTOR

SOUND RATING-A

LAMP
TYPE
F032TB
F025TB

32W
25W

44 AMP
35 AMP

MIN
STARTING
TEMP

50° F
50° F

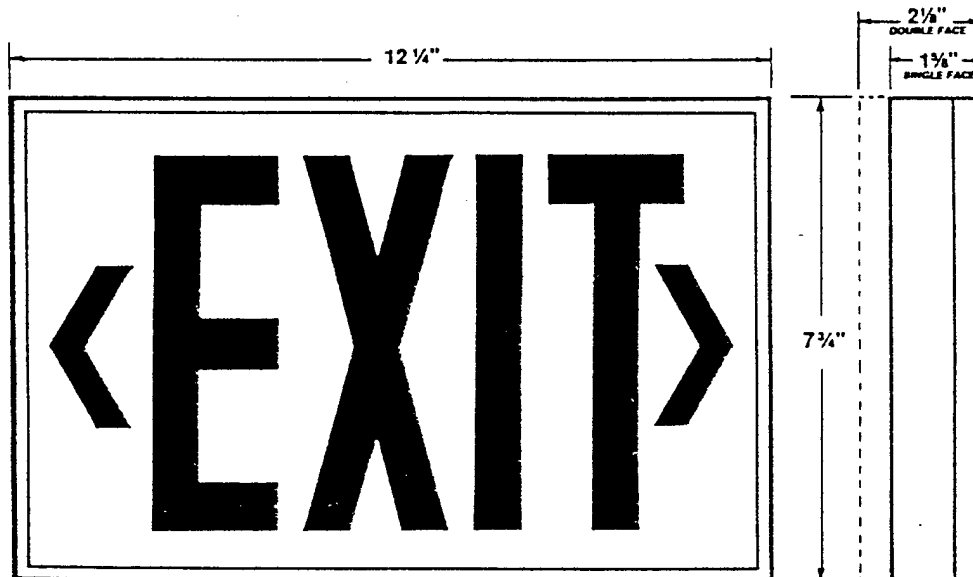
INSTALL IN ACCORDANCE WITH
NATIONAL AND LOCAL ELECTRICAL CODES

**HIGH PERFORMANCE
ELECTRONIC BALLASTS**
FLUORESCENT 1, 2, 3 and 4 LAMP
RAPID START

Total Customer Satisfaction

C-10

The LED of the 21st Century



No Ifs, Ands or Buts.

This is exactly how the EVENLITE 2000 appears! Perfectly even illumination is produced by indirect lighting, so that the LED's are invisible, with no hot spots. All this is provided in the slimmest sign on the market with integral charger and battery.

No competitor comes close to these combined specifications:

- Less than 3 watts total power per face
- Perfect light distribution across face
- Single face only 1 1/8" thick
- Double face only 2 1/8" thick
- Remote unit only 1/2" thick
- Multiple LED lamps with 20 year unconditional guarantee
- NICAD batteries with 5 year guarantee
- Aluminum housing for light weight and strength
- Universal mount
- Baked enamel, vinyl clad or satin anodized finishes
- Polycarbonate faceplate

Patent Pending



SHIELD SOURCE INCORPORATED
220 VFW Avenue, Grasonville, Maryland 21638
Tel.: (410) 827-6022 Fax: (410) 827-9657

Fort Campbell Lighting Energy Study

Maintenance and Replacement Costs

<i>Product Description</i>	<i>Product Life (Hrs)</i>	<i>Material & Labor Costs</i>
Incandescent < 100 Watts	750	\$3.50
Incandescent 100-300 Watts	750	\$5.25
Incandescent > 300 Watts	1,000	\$26.00
Quartz - 200 Watts	2,000	\$32.50
4 Ft Fluorescent Tube	20,000	\$5.00
Fluorescent Exit Sign	20,000	\$8.00
Compact Fluorescent	10,000	\$18.00
Mercury Vapor - 250 Watts	12,000	\$50.00
Mercury Vapor - 400 Watts	16,000	\$50.00
Mercury Vapor - 1000 Watts	24,000	\$70.00
Metal Halide - 250 Watts	10,000	\$41.00
Metal Halide - 400 Watts	20,000	\$47.00
High Pressure Sodium - 50 Watts	24,000	\$25.00
High Pressure Sodium - 150 Watts	24,000	\$38.00

Fort Campbell Lighting Energy Study

ECO - 1: Results (All Buildings)

Area	Total Investment	First Year Savings	Simple Payback	SIR	AIRR
Airfield	\$961,777	\$148,593	6.47	1.86	7.45%
Barracks	\$1,316,203	\$153,671	8.57	1.41	5.49%
Hospital	\$412,135	\$75,908	5.43	2.22	8.74%
TOTAL	\$2,690,115	\$378,176	7.11	1.69	6.79%

Fort Campbell Lighting Energy Study

ECO - 2

Buildings Evaluated

- Airfield Bldgs (Hangars)
- Hospital (Exam Rooms and Offices)

Fort Campbell Lighting Energy Study

ECO - 2

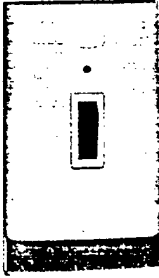
Controls Evaluated

- Occupancy Sensors
- On/Off Photocell Control for Daylighting

Switchomat™

The world's best investment in
automatic light switching
....with a 6-year proven track record!

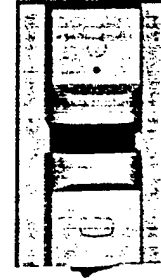
\$50.00 invested now will earn a \$500 to \$1,400 return by 1999.



Model SOM-500

Automatic wall switch replacement for private offices, conference rooms, restrooms, etc. Takes only minutes to install utilizing the existing wires.

Turns the lights on
automatically when you
enter....and off after
you leave.



Model SOM-1000

Automatic wall switch replacement for large rooms and classrooms. Takes only minutes to install utilizing the existing wires.

Special Features

Manual lights off switch • Built-in safety neon night light
• Shortened recycle time delay during installation
• Convenient visible logic key bypass provision in the unlikely event of sensor failure • Vandal resistant design.

Ultrasafe

The **Switchomat™** is equipped with a metal safety shield in compliance with the highest fire rating standards. Unit is automatically grounded for safety when mounted on an existing metal switch box.



• Universal Energy Control, Inc. is able to offer smaller sized, esthetic, moderately priced devices because of our exclusive patent #4,874,962.

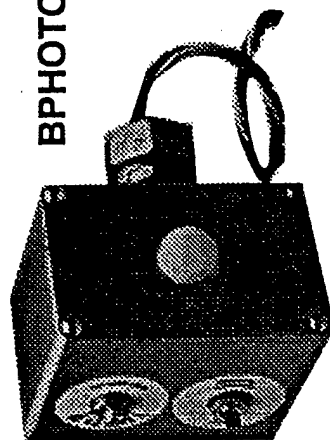
• Universal Energy Control, Inc. does not use ungrounded, potentially dangerous, bulky heat sinks, triacs or other costly trouble prone components.

• Universal Energy Control, Inc. devices provide superior operating capabilities and switching even with electronic ballast, a 90 day money back guarantee and 3 to 5 years warranty.

Photo Switches

BPHOTO-4 This unit is used to shed artificial lighting in interior daylight spaces. It monitors outside light levels through a perimeter window or skylight to provide the switching input of

a Master Sequencer or Telephone Override. The photo switch will turn loads OFF when the exterior light level reaches the set footcandle level and remains there for 15 minutes. When the light level decreases to approximately 15% less than this setting and remains there for 15 minutes, loads will be turned ON. (See the wiring diagram on page 25.)



BPHOTO-4

BPHOTO-5 This unit is designed to shed exterior lighting.

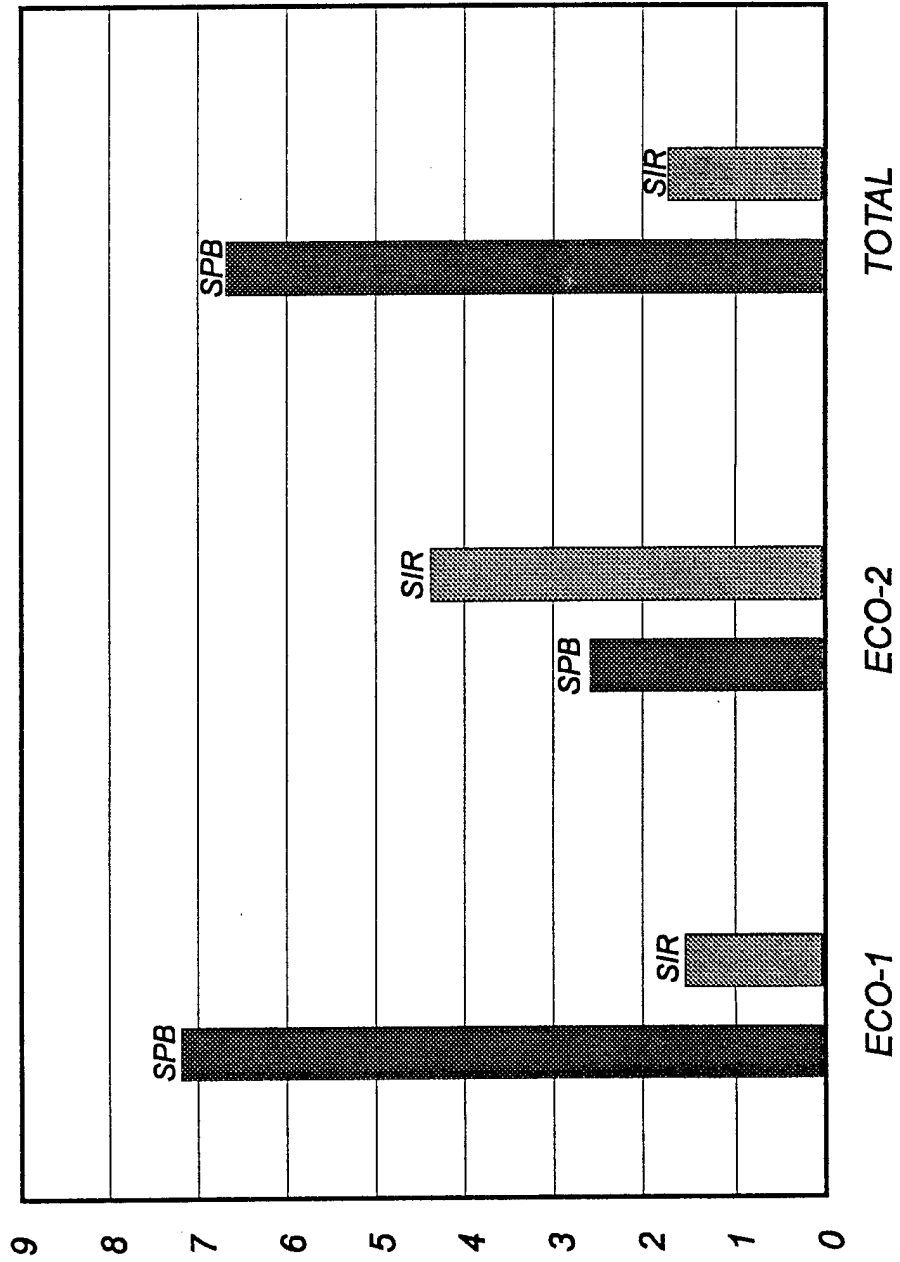
Specifications	
Catalog Number	BPHOTO-4 (indoor use only) BPHOTO-5 (indoor/outdoor use)
Foot Candle Range	BPHOTO-4 50-500 fc adjustable BPHOTO-5, 5-10 fc fixed
Power Requirement	No external source needed
Environment	18 to 55°C (0 to 131°F), non-corrosive atmosphere 0-85% RH non-condensing (BPHOTO-4) 0-100% RH (BPHOTO-5)
RFI Environment	Less than 15 v/m
Immediate Response Feature	BPHOTO-4 - Yes BPHOTO-5 - No
Hysteresis	15% typ. @ 100 fc 20% typ. @ 300 fc 25% typ. @ 500 fc

Fort Campbell Lighting Energy Study

ECO - 2: Results (All Buildings)

Area	Total Investment	First Year Savings	Simple Payback	SIR	AIRR
Airfield	\$63,245	\$26,291	2.41	4.96	14.72%
Hospital	\$11,868	\$1,174	10.11	1.23	4.53%
TOTAL	\$75,112	\$27,465	2.73	4.37	13.76%

Fort Campbell Lighting Energy Study



Fort Campbell Lighting Energy Study

Project Results

ECO	Total Investment	First Year Savings	Simple Payback	SIR	AIRR
ECO-1	\$2,690,115	\$378,176	7.11	1.69	6.79%
ECO-2	\$75,112	\$27,465	2.73	4.37	13.76%
TOTAL	\$2,765,227	\$405,641	7.11	1.77	7.09%

Fort Campbell Lighting Energy Study

Remaining Phases

- Response to Interim Review Comments
- Preparation of Programming and Implementation Documents
- Final Report - Sept. 21, 1994

ANNUAL RECURRING MAINTENANCE COST DIFFERENTIAL FOR BARRACK FACILITIES							
ANNUAL MAINTENANCE COST/FIXTURE = #HR OPER./YR x 1/#HR OF LIFE x MAINTENANCE COST/FIXTURE							
DIFFERENTIAL MAINT. COST = #HR OPER./YR x (MAINT. COST 1/LAMP LIFE1 - MAINT. COST 2/LAMP LIFE 2) x # LAMP							
CALCULATION BASED ON ONE-FOR- ONE REPLACEMENT							
Fixture Type		Lamp Life HRS		Maintenance Cost/Life of Lamp Lamp cost + Labor cost			
Fluor. T-12 Lamp Magnetic Ballast		20000		\$20.00 (4-LAMP)			
Fluor. T-8 Lamp Electronic Ballast		20000		\$20.00 (4-LAMP)			
* no significant cost differential							
Incandescent		750		\$3.50			
Compact Fluorescent		20000		\$18.00			
Incandescent Exit Sign		750		\$3.50			
L.E.D Exit Sign		200000		\$0.00			
BLDG. #	Incandescent to Comp. Fluorescent			Incandescent Exit to L.E.D. Exit			Total Recurring Annual Maintenance Cost
	# Fixture	Operation Hrs/Yr	Differential Maint. Cost \$/YR	# Fixture	Operation Hrs/Yr	Differential Maint. Cost \$/YR	
3211	0	0	\$0.00	2	8760	\$81.76	\$81.76
3212	0	0	\$0.00	4	8760	\$163.52	\$163.52
3213	0	0	\$0.00	8	8760	\$327.04	\$327.04
3214	12	8760	\$395.95	1	8760	\$40.88	\$436.83
3215	3	8760	\$98.99	2	8760	\$81.76	\$180.75
3216	12	8760	\$395.95	0	0	\$0.00	\$395.95
3217	2	8760	\$65.99	4	8760	\$163.52	\$229.51
3218	23	8760	\$758.91	4	8760	\$163.52	\$922.43
6709	14	8760	\$461.94	11	8760	\$449.68	\$911.62
6710	12	8760	\$395.95	6	8760	\$245.28	\$641.23
	51	2080	\$399.57	0	8760	\$0.00	\$399.57
							\$1,040.80
6711	12	8760	\$395.95	2	8760	\$81.76	\$477.71
6712	20	8760	\$659.92	5	8760	\$204.40	\$864.32
	8	2080	\$62.68	0	8760	\$0.00	\$62.68
							\$927.00
6718	13	8760	\$428.95	7	8760	\$286.16	\$715.11
	5	3120	\$58.76	0	8760	\$0.00	\$58.76
							\$773.87
6719	10	8760	\$329.96	8	8760	\$327.04	\$657.00
6725	13	8760	\$428.95	6	8760	\$245.28	\$674.23
	4	3120	\$47.01	0	8760	\$0.00	\$47.01
							\$721.24
6726	12	8760	\$395.95	7	8760	\$286.16	\$682.11
6727	12	8760	\$395.95	7	8760	\$286.16	\$682.11
6728	13	8760	\$428.95	9	8760	\$367.92	\$796.87
	109	3120	\$1,280.97	0	8760	\$0.00	\$1,280.97
							\$2,077.84
6730	12	8760	\$395.95	5	8760	\$204.40	\$600.35
	5	3120	\$58.76	0	8760	\$0.00	\$58.76
							\$659.11
6731	14	8760	\$461.94	0	8760	\$0.00	\$461.94
	5	2080	\$39.17	0	8760	\$0.00	\$39.17
							\$501.12
6732	16	8760	\$527.94	0	8760	\$0.00	\$527.94
	4	2080	\$31.34	0	8760	\$0.00	\$31.34
							\$559.27
6733	12	8760	\$395.95	0	8760	\$0.00	\$395.95

ANNUAL RECURRING MAINTENANCE COST DIFFERENTIAL FOR BARRACK FACILITIES							
ANNUAL MAINTENANCE COST/FIXTURE = #HR OPER./YR x 1/#HR OF LIFE x MAINTENANCE COST/FIXTURE							
DIFFERENTIAL MAINT. COST = #HR OPER./YR x (MAINT. COST 1/LAMP LIFE1 - MAINT. COST 2/LAMP LIFE 2) x # LAMP							
CALCULATION BASED ON ONE-FOR- ONE REPLACEMENT							
Fixture Type	Lamp Life HRS		Maintenance Cost/Life of Lamp Lamp cost + Labor cost				
Fluor. T-12 Lamp Magnetic Ballast	20000		\$20.00 (4-LAMP)				
Fluor. T-8 Lamp Electronic Ballast	20000		\$20.00 (4-LAMP)				
* no significant cost differential							
Incandescent	750		\$3.50				
Compact Fluorescent	20000		\$18.00				
Incandescent Exit Sign	750		\$3.50				
L.E.D Exit Sign	200000		\$0.00				
BLDG. #	Incandescent to Comp. Fluorescent			Incandescent Exit to L.E.D. Exit			
	# Fixture	Operation Hrs/Yr	Differential Maint. Cost \$/YR	# Fixture	Operation Hrs/Yr	Differential Maint. Cost \$/YR	Total Recurring Annual Maintenance Cost
6909	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	5	3120	\$58.76	0	8760	\$0.00	\$58.76
							\$454.71
6910	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	4	2080	\$31.34	0	8760	\$0.00	\$31.34
							\$427.29
6911	12	8760	\$395.95	0	8760	\$0.00	\$395.95
6912	16	8760	\$527.94	0	8760	\$0.00	\$527.94
6917	12	8760	\$395.95	0	8760	\$0.00	\$395.95
6918	15	8760	\$494.94	0	8760	\$0.00	\$494.94
	9	2080	\$70.51	0	8760	\$0.00	\$70.51
							\$565.45
6919	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	24	3120	\$282.05	0	8760	\$0.00	\$282.05
							\$678.00
6920	19	8760	\$626.92	0	8760	\$0.00	\$626.92
6923	4	8760	\$131.98	0	8760	\$0.00	\$131.98
6927	12	8760	\$395.95	2	8760	\$81.76	\$477.71
6928	17	8760	\$560.93	0	8760	\$0.00	\$560.93
	12	2080	\$94.02	0	8760	\$0.00	\$94.02
							\$654.95
6929	12	8760	\$395.95	0	8760	\$0.00	\$395.95
6930	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	5	3120	\$58.76	0	8760	\$0.00	\$58.76
							\$454.71
6931	12	8760	\$395.95	0	8760	\$0.00	\$395.95
6936	12	8760	\$395.95	0	8760	\$0.00	\$395.95
6937	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	4	2080	\$31.34	0	8760	\$0.00	\$31.34
							\$427.29
6938	14	8760	\$461.94	0	8760	\$0.00	\$461.94
	4	3120	\$47.01	0	8760	\$0.00	\$47.01
							\$508.95
6939	15	8760	\$494.94	0	8760	\$0.00	\$494.94
6940	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	1	3120	\$11.75	0	8760	\$0.00	\$11.75
							\$407.70
6943	22	8760	\$725.91	0	8760	\$0.00	\$725.91
	4	2080	\$31.34	0	8760	\$0.00	\$31.34
							\$757.25
6944	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	1	3120	\$11.75	0	8760	\$0.00	\$11.75
							\$407.70
6945	12	8760	\$395.95	0	8760	\$0.00	\$395.95
	3	2080	\$23.50	0	8760	\$0.00	\$23.50
							\$419.46

BLDG # 7109

EXISTING

$$(2 \text{ LAMPS}) \left(\frac{4400 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{2000 \text{ HR}} \right) \left(\frac{\$32.50}{\text{LAMP}} \right) = \$143.00/\text{YR}$$

PROPOSED

$$(2 \text{ LAMPS}) \left(\frac{4400 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$25.00}{\text{LAMP}} \right) = \$9.17/\text{YR}$$

$$\text{SAVINGS} = \$143.00/\text{YR} - \$9.17/\text{YR} = \$133.83/\text{YR}$$

BLDG # 7110

EXISTING

$$(4 \text{ LAMPS}) \left(\frac{3500 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$65.33/\text{YR}$$

$$(3 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$122.64/\text{YR}$$

$$\underline{\$187.97/\text{YR}}$$

PROPOSED

$$(4 \text{ LAMPS}) \left(\frac{3500 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$12.60/\text{YR}$$

$$\text{SAVINGS} = 187.97 - 12.60 = \$175.37 \text{ YR}$$

BLDG # 7112

EXISTING

$$(3 \text{ LAMPS}) \left(\frac{5096 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$71.34/\text{YR}$$

$$(1 \text{ SIGN}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$40.88/\text{YR}$$

$$\underline{\$112.42/\text{YR}}$$

PROPOSED

$$(3 \text{ LAMPS}) \left(\frac{5096 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$13.26/\text{YR}$$

$$\text{SAVINGS} = \$112.42/\text{YR} - \$13.26/\text{YR} = \$98.46/\text{YR}$$

Title MAINTENANCE SAVINGS DUE TO RETROFIT AT THE AIRFIELD - ECU	Checked By Prepared By JY. DAFFRON	Date 4 AUG 94
Project FT CAMPBELL LIGHTING STUDY	Job No. 94013.01	Sheet No. 1/11

BLDG 7118

EXISTING

$$(3 \text{ LAMPS}) \left(\frac{5096 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$71.34/\text{YR}$$

$$(1 \text{ SIGN}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$40.88/\text{YR}$$

$$\underline{\$112.42/\text{YR}}$$

PROPOSED

$$(3 \text{ LAMPS}) \left(\frac{5096 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$13.76/\text{YR}$$

$$\text{SAVINGS} = \$112.42/\text{YR} - \$13.76/\text{YR} = \$98.66/\text{YR}$$

BLDG 7120

EXISTING

$$(3 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$50.96/\text{YR}$$

$$(1 \text{ SIGN}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$40.88/\text{YR}$$

$$\underline{\$91.84/\text{YR}}$$

PROPOSED

$$(3 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$9.82/\text{YR}$$

$$\text{SAVINGS} = \$91.84/\text{YR} - \$9.82/\text{YR} = \$82.02/\text{YR}$$

BLDG 7131

EXISTING

$$(3 \text{ LAMPS}) \left(\frac{1040 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$14.56/\text{YR}$$

PROPOSED

$$(3 \text{ LAMPS}) \left(\frac{1040 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$2.81/\text{YR}$$

$$\text{SAVINGS} = \$14.56 - \$2.81 = \$11.75/\text{YR}$$

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BLDG 7133

EXISTING

$$(2 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$7.28 / \text{YR}$$

PROPOSED

$$(2 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$1.40 / \text{YR}$$

$$\text{SAVINGS} = \$7.28 / \text{YR} - \$1.40 / \text{YR} = \$5.88 / \text{YR}$$

BLDG 7149

EXISTING

$$(3 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$10.92 / \text{YR}$$

$$(6 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$245.28 / \text{YR}$$

$$\underline{\$256.20 / \text{YR}}$$

PROPOSED

$$(3 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$2.11 / \text{YR}$$

$$\text{SAVINGS} = \$256.20 / \text{YR} - \$2.11 / \text{YR} = \$254.09 / \text{YR}$$

BLDG 7154

EXISTING

$$(69 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$5.25}{\text{LAMP}} \right) = \$1,004.64 / \text{YR}$$

$$(3 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$5.25}{\text{LAMP}} \right) = \$16.38 / \text{YR}$$

$$\underline{\$1,021.02 / \text{YR}}$$

PROPOSED

$$(46 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000} \right) \left(\frac{\$5.00}{\text{LAMP}} \right) = \$23.92 / \text{YR}$$

$$(3 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$2.11 / \text{YR}$$

$$\underline{\$26.03}$$

$$\text{SAVINGS} = \$1,021.02 / \text{YR} - \$26.03 / \text{YR} = \$994.99 / \text{YR}$$

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BLDG 7155

EXISTING

$$(7 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$25.48 / \text{YR}$$

PROPOSED

$$(7 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$4.91 / \text{YR}$$

$$\text{SAVINGS} = \$25.48 / \text{YR} - \$4.91 / \text{YR} = \$20.57 / \text{YR}$$

BLDG 7156

EXISTING

$$(89 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$5.25}{\text{LAMP}} \right) = \$1,295.84 / \text{YR}$$

$$(3 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$5.25}{\text{LAMP}} \right) = \$16.38 / \text{YR}$$

$$\underline{\$1312.22 / \text{YR}}$$

PROPOSED

$$(60 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$5.00}{\text{LAMP}} \right) = \$31.20 / \text{YR}$$

$$(3 \text{ LAMPS}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = 2.11 / \text{YR}$$

$$\underline{\$33.31 / \text{YR}}$$

$$\text{SAVINGS} = \$1312.22 / \text{YR} - \$33.31 / \text{YR} = \$1278.91 / \text{YR}$$

BLDG 7159

EXISTING

$$(10 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$97.07 / \text{YR}$$

PROPOSED

$$(10 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$18.72 / \text{YR}$$

$$\text{SAVINGS} = \$97.07 / \text{YR} - \$18.72 / \text{YR} = \$78.35 / \text{YR}$$

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BLDG 7160

EXISTING

$$(8 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$77.65/\text{YR}$$

$$(23 \text{ LAMPS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$5.25}{\text{LAMP}} \right) = \$1410.30/\text{YR}$$

$$\underline{\$1488.95/\text{YR}}$$

PROPOSED

$$(8 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$14.79/\text{YR}$$

$$(23 \text{ LAMPS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$25.00}{\text{LAMP}} \right) = \$209.83/\text{YR}$$

$$\underline{\$224.62/\text{YR}}$$

$$\text{SAVINGS} = \$1488.95 - \$224.62/\text{YR} = \$1263.33/\text{YR}$$

BLDG 7164

EXISTING

$$(2 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$81.26/\text{YR}$$

$$\text{SAVINGS} = \$81.26/\text{YR}$$

BLDG 7165

NO SAVINGS

BLDG 7170

EXISTING

$$(10 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$408.80$$

$$\text{SAVINGS} = \$408.80/\text{YR}$$

BLDG 7176

EXISTING

$$(3 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$122.64/\text{YR}$$

$$(38 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{12,000 \text{ HR}} \right) \left(\frac{\$50.00}{\text{LAMP}} \right) = \$329.33/\text{YR}$$

$$\underline{\$451.97/\text{YR}}$$

PROPOSED

$$(38 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$38.00}{\text{LAMP}} \right) = \$125.15/\text{YR}$$

$$\text{SAVINGS} = \$451.97/\text{YR} - \$125.15/\text{YR} = \$326.82$$

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<p>Project</p> <p>FT CAMPBELL LIGHTING STUDY</p>	<p>Job No.</p> <p>94013.01</p>	<p>Sheet No.</p> <p>5/11</p>

BLDG 7179

EXISTING

$$(4 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$163.52/\text{YR}$$

$$\text{SAVINGS} = \$163.52/\text{YR}$$

BLDG 7206

EXISTING

$$(10 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$8.00}{\text{SIGN}} \right) = \$35.04/\text{YR}$$

$$(20 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{16,000 \text{ HR}} \right) \left(\frac{\$50.00}{\text{LAMP}} \right) = \$162.50/\text{YR}$$

$$(42 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$70.00}{\text{LAMP}} \right) = \$318.50/\text{YR}$$

$$\underline{\$516.04/\text{YR}}$$

PROPOSED

$$(20 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{10,000 \text{ HR}} \right) \left(\frac{\$41.00}{\text{LAMP}} \right) = \$213.20/\text{YR}$$

$$(42 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$47.00}{\text{LAMP}} \right) = \$256.63/\text{YR}$$

$$\underline{\$469.83/\text{YR}}$$

$$\text{SAVINGS} = \$516.04/\text{YR} - \$469.83/\text{YR} = \$46.21/\text{YR}$$

BLDG 7208

EXISTING

$$(4 \text{ LAMPS}) \left(\frac{280 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$14.50/\text{YR}$$

$$(2 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{1000 \text{ HR}} \right) \left(\frac{\$26.00}{\text{LAMP}} \right) = \$135.20/\text{YR}$$

$$(28 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{16,000 \text{ HR}} \right) \left(\frac{\$50.00}{\text{LAMP}} \right) = \$227.50/\text{YR}$$

$$(96 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$70.00}{\text{LAMP}} \right) = \$728.00/\text{YR}$$

$$\underline{\$1,105.20/\text{YR}}$$

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BLDG 7208 CONT.

PROPOSED

$$(4 \text{ LAMPS}) \left(\frac{280 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$2.24/\text{YR}$$

$$(2 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$4.68/\text{YR}$$

$$(28 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{10,000 \text{ HR}} \right) \left(\frac{\$41.00}{\text{LAMP}} \right) = \$298.48/\text{YR}$$

$$(96 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$47.00}{\text{LAMP}} \right) = \$586.56/\text{YR}$$

$$\text{SAVINGS} = \$1105.20/\text{YR} - \$892.53/\text{YR} = \$212.67/\text{YR}$$

BLDG 7210

EXISTING

$$(1 \text{ LAMP}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$12.13/\text{YR}$$

$$(10 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$38.00}{\text{SIGN}} \right) = \$35.04/\text{YR}$$

$$(39 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{16,000 \text{ HR}} \right) \left(\frac{\$150.00}{\text{LAMP}} \right) = \$316.88/\text{YR}$$

$$(50 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$170.00}{\text{LAMP}} \right) = \$379.17/\text{YR}$$

$$(6 \text{ LAMPS}) \left(\frac{4400 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$23.50}{\text{LAMP}} \right) = \$123.20/\text{YR}$$

$$\underline{\$866.42/\text{YR}}$$

PROPOSED

$$(1 \text{ LAMP}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$2.34/\text{YR}$$

$$(39 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{10,000 \text{ HR}} \right) \left(\frac{\$41.00}{\text{LAMP}} \right) = \$415.24/\text{YR}$$

$$(50 \text{ LAMPS}) \left(\frac{2600 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$47.00}{\text{LAMP}} \right) = \$305.50/\text{YR}$$

$$(6 \text{ LAMPS}) \left(\frac{4400 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$23.00}{\text{LAMP}} \right) = \$27.50/\text{YR}$$

$$\underline{\$751.08}$$

$$\text{SAVINGS} = \$866.42/\text{YR} - \$751.08/\text{YR} = \$115.34/\text{YR}$$

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BLDG 7212

EXISTING

$$(7 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$118.91 / \text{YR}$$

PROPOSED

$$(7 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$22.92 / \text{YR}$$

$$\text{SAVINGS} = \$118.91 / \text{YR} - \$22.92 / \text{YR} = \$95.99 / \text{YR}$$

BLDG 7214

EXISTING

$$(1 \text{ LAMP}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$3.64 / \text{YR}$$

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{1000 \text{ HR}} \right) \left(\frac{\$26.00}{\text{LAMP}} \right) = \$108.16 / \text{YR}$$

$$(1 \text{ SIGN}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$8.00}{\text{SIGN}} \right) = \$3.50 / \text{YR}$$

$$(23 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{16,000 \text{ HR}} \right) \left(\frac{\$50.00}{\text{LAMP}} \right) = \$261.63 / \text{YR}$$

$$(96 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$70.00}{\text{LAMP}} \right) = \$1019.00 / \text{YR}$$

$$\underline{\$1396.13 / \text{YR}}$$

PROPOSED

$$(1 \text{ LAMP}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$0.72 / \text{YR}$$

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$3.74 / \text{YR}$$

$$(23 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{10,000 \text{ HR}} \right) \left(\frac{\$41.00}{\text{LAMP}} \right) = \$343.35 / \text{YR}$$

$$(96 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$47.00}{\text{LAMP}} \right) = \$821.18 / \text{YR}$$

$$\underline{\$1168.87 / \text{YR}}$$

$$\text{SAVINGS} = \$1396.13 / \text{YR} - \$1168.87 / \text{YR} = \$227.26 / \text{YR}$$

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BLDG 7218

EXISTING

$$(1 \text{ LAMP}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{LAMP}} \right) = \$3.64/\text{YR}$$

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{1000 \text{ HR}} \right) \left(\frac{\$26.12}{\text{LAMP}} \right) = \$108.18/\text{YR}$$

$$(3 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$8.00}{\text{SIGN}} \right) = \$10.51/\text{YR}$$

$$(28 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{16,000 \text{ HR}} \right) \left(\frac{\$50.00}{\text{LAMP}} \right) = \$318.50/\text{YR}$$

$$(96 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$70.00}{\text{LAMP}} \right) = \$1019.33/\text{YR}$$

$$\underline{\$1459.95/\text{YR}}$$

PROPOSED

$$(1 \text{ LAMP}) \left(\frac{780 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$0.72/\text{YR}$$

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$3.74/\text{YR}$$

$$(28 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{10,000 \text{ HR}} \right) \left(\frac{\$41.00}{\text{LAMP}} \right) = \$417.82/\text{YR}$$

$$(96 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$42.00}{\text{LAMP}} \right) = \$821.18/\text{YR}$$

$$\underline{\$1243.42/\text{YR}}$$

$$\text{SAVINGS} = \$1459.95/\text{YR} - \$1243.42/\text{YR} = \$216.53/\text{YR}$$

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BLOG 7243

EXISTING

$$(2 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20000 \text{ HR}} \right) \left(\frac{\$8.00}{\text{SIGN}} \right) = \$7.00 / \text{YR}$$

$$(120 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24000 \text{ HR}} \right) \left(\frac{\$70.00}{\text{LAMP}} \right) = \$1274.00 / \text{YR}$$

$$(9 \text{ LAMPS}) \left(\frac{4400 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$5.25}{\text{LAMP}} \right) = \$277.20 / \text{YR}$$

$$\underline{\$1558.20 / \text{YR}}$$

PROPOSED

$$(120 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$47.00}{\text{LAMP}} \right) = \$1026.40 / \text{YR}$$

$$(9 \text{ LAMPS}) \left(\frac{4400 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$25.00}{\text{LAMP}} \right) = \$41.25 / \text{YR}$$

$$\underline{\$1067.23 / \text{YR}}$$

$$\text{SAVINGS} = \$1558.20 / \text{YR} - \$1067.23 / \text{YR} = \$490.97 / \text{YR}$$

BLOG 7245

EXISTING

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{1000 \text{ HR}} \right) \left(\frac{\$26.00}{\text{LAMP}} \right) = \$108.16 / \text{YR}$$

$$(11 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$8.00}{\text{SIGN}} \right) = \$38.54 / \text{YR}$$

$$(70 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$70.00}{\text{LAMP}} \right) = \$743.17 / \text{YR}$$

$$\underline{\$889.87 / \text{YR}}$$

PROPOSED

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$3.74 / \text{YR}$$

$$(70 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$42.00}{\text{LAMP}} \right) = \$598.78 / \text{YR}$$

$$\underline{\$602.52 / \text{YR}}$$

$$\text{SAVINGS} = \$889.87 / \text{YR} - \$602.52 / \text{YR} = \$287.35 / \text{YR}$$

Title MAINTENANCE SAVINGS DUE TO RETROFIT AT THE AIRFIELD - ECOI	Checked By Prepared By J.Y. DAFFRON	Date 4 AUG-94
Project FT CAMPBELL LIGHTING STUDY	Job No. 94013.01	Sheet No. 10/11

BLDG 7249

EXISTING

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{1000 \text{ HR}} \right) \left(\frac{\$26.00}{\text{LAMP}} \right) = \$108.16/\text{YR}$$

$$(11 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$38.00}{\text{SIGN}} \right) = \$38.57/\text{YR}$$

$$(70 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{24,000 \text{ HR}} \right) \left(\frac{\$70.00}{\text{LAMP}} \right) = \$743.17/\text{YR}$$

$$\underline{\$889.87/\text{YR}}$$

PROPOSED

$$(2 \text{ LAMPS}) \left(\frac{2080 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$18.00}{\text{LAMP}} \right) = \$3.74/\text{YR}$$

$$(70 \text{ LAMPS}) \left(\frac{3640 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{20,000 \text{ HR}} \right) \left(\frac{\$47.00}{\text{LAMP}} \right) = \$598.78/\text{YR}$$

$$\underline{\$602.52/\text{YR}}$$

$$\text{SAVINGS} = \$889.87/\text{YR} - \$602.52/\text{YR} = \$287.35/\text{YR}$$

BLDG 7281

EXISTING

$$(5 \text{ SIGNS}) \left(\frac{8760 \text{ HR}}{\text{YR}} \right) \left(\frac{1}{750 \text{ HR}} \right) \left(\frac{\$3.50}{\text{SIGN}} \right) = \$204.40/\text{YR}$$

$$\text{SAVINGS} = \$204.40/\text{YR}$$

<p>Title MAINTENANCE SAVINGS DUE TO RETROFIT AT THE AIRFIELD - ELO 1</p>	<p>Checked By</p>	<p>Date 4 AUG-94</p>
<p>Project FT CAMPBELL LIGHTING STUDY</p>	<p>Prepared By J.Y. DAFFRON Job No. 94013.01</p>	<p>Sheet No. D-13 11/11</p>